T 500
.B1 D7
Copy 1

AMERICAN EDITION. ⁘ *ILLUSTRATED.*

THE

World's Columbian Exposition

AND THE

CITY OF CHICAGO

VIEWED FROM AN ENGLISH STANDPOINT.

WAR DEPARTMENT
LIBRARY.

A STEREOPTICON LECTURE

RECENTLY ⁘ DELIVERED ⁘ BEFORE ⁘ THE

LONDON ⁘ POLYTECHNIC ⁘ INSTITUTE

BY

JAMES DREDGE,

Member of the Royal Commission for Great Britain and Ireland at the World's Columbian Exposition, 1893.

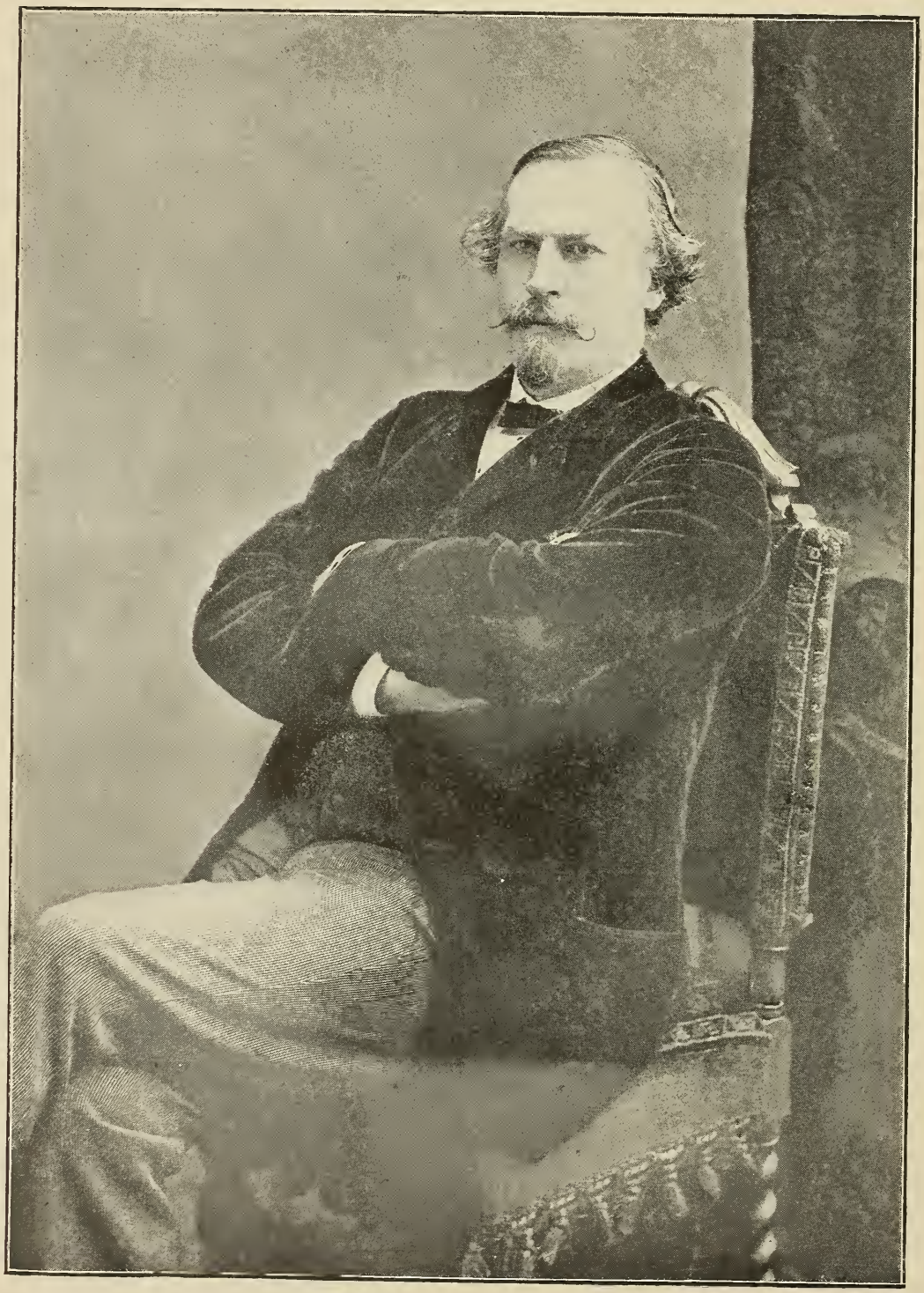
APPENDIX WITH STATISTICS TO DATE.

CHICAGO:
H. V. HOLMES, LAKESIDE BUILDING.

1892.

PRICE TWENTY-FIVE CENTS.

T500
.B407



James Hedge

Chicago and Her Exposition of 1893.

A Stereopticon Lecture

Recently Delivered Before the

LONDON POLYTECHNIC INSTITUTE.

BY

JAMES DREDGE.

Member of the British Royal Commission.
Member of Council of the London Society of Arts.
Honorary Member of the American Society of Mechanical Engineers.
Officier de la Legion D'Honneur.
Officier de l'Instruction Publique.
Editor of London "Engineering."

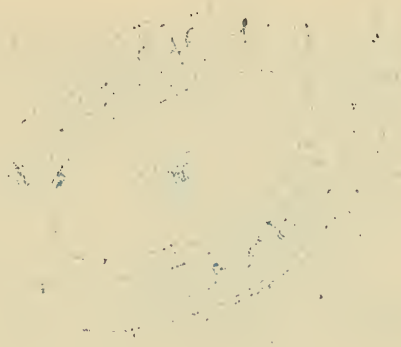
WITH A PREFACE BY THE AUTHOR.

Illustrated with Numerous Engravings and a Bird's-Eye View of the Exposition Buildings.

CHICAGO:
H. V. HOLMES, LAKESIDE BUILDING.

1892.

Copy 2



T500
.B1I7

By transfer

AUG 18 1915

WAR DEPARTMENT
LIBRARY.

PREFATORY NOTE.

The following lecture has been considered of sufficient interest to be submitted to the perusal of the American people, and it has therefore—at the suggestion of some of my kind friends in Chicago—been reprinted in its present form. In offering it to the indulgent criticism of (I hope) a large circle of readers in the United States, I wish to make the following very brief explanation. The lecture was delivered before a crowded and deeply attentive audience at that admirable institution, the London Polytechnic, solely with the object of awaking a general interest in England, on the subject of the World's Columbian Exposition; to give the British public some faint idea of the importance of the Exposition, and of the city in which it will be held; to indicate some of the advantages that will be enjoyed by foreign visitors to Chicago in 1893, and above all, to aid in some small measure the admirable and very successful movement organized by the Polytechnic, for helping the wage workers in England to visit what will undoubtedly be the greatest exhibition of the century. That these objects have been partially achieved is evident from the public demand which has arisen for the reprint of the lecture in the United Kingdom, and which, according to the Polytechnic Journal, will involve the issue of 100,000 copies; and from the fact that arrangements have now been completed for delivering the lecture throughout the country with the numerous stereopticon slides, with which it is illustrated.

I wish to disclaim all but the small amount of credit which is really mine, in connection with this very successful effort to disseminate information and to place the remainder where it is due. First, to Mr. Quentin Hogg, the public spirited Director of the Polytechnic, who has showed in this, as in all other matters with

which he is associated, an enterprise and public spirit wholly untarnished by thought of profit or vain-glory. Second, to Sir Phillip Cunliffe Owen, that Nestor of exhibitions, as he has been so happily called by one of the accomplished Chiefs of the World's Fair. The people of Chicago do not know how much they are indebted to Sir Phillip Owen for the interest that has been created abroad, not only in England, but throughout Europe, in the Columbian Exposition; but they will learn one day, even though he may not take so prominent a part in the direction of the British section as the friends of the Exhibition would desire. I, who have had the privilege of his friendship through many years, find it difficult to speak of him in terms that do justice to him as a friend, and as a genius in the control of Exhibitions, and I most gladly seize this occasion to tell the people of the United States that which I know to be the truth. It was Sir Phillip Owen who acted as the guide, philosopher and friend to the American Commission that visited Europe last year; it is he who is the ever ready and sound counsellor of all who come to him—as I am often glad to come—and who never fail to gain help and strength from his advice. It was Sir Phillip Owen who presided at this Polytechnic lecture of mine; and it is he who aided Mr. McCormick, the American Commissioner in London, to organize a lecture tour throughout England, commencing under the patronage of the Lord Mayor of London. The only part I have played in this matter has been to write, and deliver once (perhaps oftener), this lecture; I have done this, not as a part of my duties as a member of the British Royal Commission, whose work is to encourage exhibitors, rather than visitors, to go to Chicago in 1893, but as the earnest friend of the World's Columbian Exposition, of the citizens of Chicago, and of the people of the United States, with the desire that my own countrymen may attend the World's Fair in such numbers that mutual knowledge and confidence may be increased, and that the two great Anglo-Saxon nations may be brought more closely and more harmoniously together.

JAMES DREDGE.

LONDON, CLAPHAM LODGE, *February, 1892.*

WAR DEPARTMENT
LIBRARY.

I.—INTRODUCTION.

The Directors of this Institution have, with their usual energy and foresight, already commenced those important arrangements by which a large number of you will be able to visit Chicago and its International Exhibition in 1893, under exceptionally favorable conditions. It may seem to many that these arrangements have been undertaken earlier than is needful, and that those who propose to profit by the chance afforded them, need be in no hurry to arrive at a final decision. But this is by no means the case; the responsibility of conducting a large body of travelers to so great a distance, and of bringing them back filled with pleasant and profitable recollections, is so heavy, and the details to be elaborated are so numerous and complicated, that I am glad to learn your able Secretary, Mr. Mitchell, has prepared for a very early visit to Chicago to complete arrrangements; the representative of this important association will realize on his arrival, and you later on will participate in, the benefits resulting from this promptness of action.

The hearty response that your members have already made to the announcement of this notable excursion, is at once a proof of your confidence in your Directors, and of your keen interest in the Exhibition. It has been suggested that this interest may be further increased, and the active spirit of the movement encouraged, if you were informed of the real nature and scope of the Exhibition; and if you were placed in a position to form some idea, however incomplete, of the famous city in which it will be held. It is for these reasons that I have the honor of claiming your attention for an hour this evening.

When I first visited Chicago in connection with the Exhibition, in the autumn of 1890, although the organization was chaotic and no work had been done, it did not need much perception to know that

the citizens of Chicago, and those they had placed in charge, were essentially the men to carry the vast undertaking to a successful end ; and when the following winter I made the first address delivered in Europe, on the subject of the Exhibition, I did not hesitate to stake my reputation on this successful issue. When I again visited Chicago last September, as the envoy of the Royal Commission, I found that events had outstripped my anticipations, and that not only the organization, but the actual work of construction, had made more progress than I could have thought possible in the space of twelve months.

As I have made this Exhibition my special and particular study since its inception in 1889 ; as I am in constant and friendly communication with the Chiefs of the Executive in Chicago ; and as I have already written and published enough to fill a large volume on the subject, I am probably for the moment in a better position than any one else to give the information which the Directors of this Institution think will be of interest and use to you this evening. I had some idea of introducing the subject by a few words on the voyage that so many of you will undertake eighteen months from now, but that would occupy too much time, and may at a later and more appropriate date, form the topic for an instructive address, so tonight I will only say in this connection that when the time comes you will find the journey as full of comfort, and more full of a special interest, than any which have been previously arranged for you.

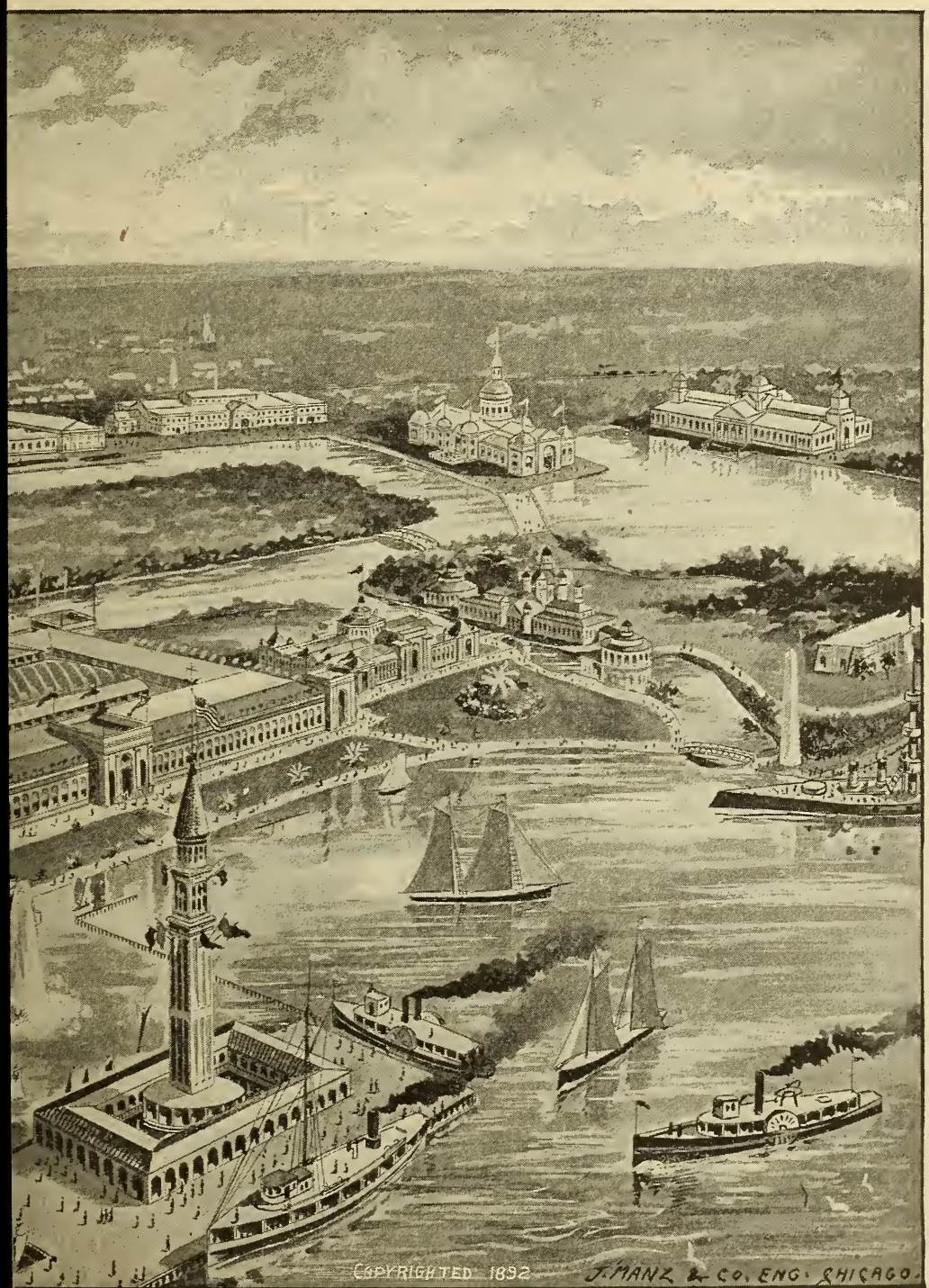
I wonder how many among this audience have a clear idea of the exact location of Chicago, or of its importance as a great commercial center. Half a century ago it was still outside the pale of civilization ; a small and remote western city. But the rapid growth of population in the United States, and its consequent march westward, changed the relative conditions year by year, until today the centre of gravity of the population is abreast of Chicago, though somewhat to the south—near Cincinnati, in fact. Fifty years ago the population of the State of Illinois, of which Chicago is the principal city, was less than six to the square mile ; today it is claimed that the metropolis of the central States represents the most populated portion in the country ; that is to say, if Chicago be taken as the

center of a circle of 500 miles radius, more people would be enclosed in that circle than in any other similar area throughout the United States. Almost all circumstances, natural as well as artificial, have favored this rapid growth. As the continuous waves of progress have swept across the great continent, they have steadily raised Chicago to a higher eminence, and into her present proud position of importance. It is a very general, and certainly a very pardonable weakness of the citizens of Chicago, to draw comparison between their city and the other great cities of the United States, New York not excepted. But I think that such comparisons are quite unnecessary, for Chicago is *sui generis;* a unique city of the nineteenth century; made unique by the energy of her people; by the advantages of her geographical position; by the development of the middle and western States; and above all by the facilities of communication, which enable her to stretch out her hands, laden with true riches—the produce of the soil—to all the world. In the commencement, the prosperity of the young city was due to the advance of the east towards the west; but this condition of things has long been changed, and it is the west now—the grain-growing, cattle-raising and mining west, that pours its wealth into the city as the center, whence it is distributed all over the world.

And with the steady development of this great west of which the resources are only now being utilized, the importance and wealth of Chicago must increase, and increase probably as rapidly as they have done during the last twenty years. We can form but a very limited idea of the extent and future possibilities of the States lying to the west of the Mississippi, and the development of which directly affects the trade of Chicago; the area on the west of the great river is twice as large as that which lies on the east, and of this, what is not mineral land, is for most part richly adapted for agricultural pursuits. The proportions of the western States are almost beyond one's grasp; Texas could hold the whole population of the United States and not be much more crowded than Germany; Dakota could do the same, and so could New Mexico. The State of Texas alone could produce nearly all the food crops required for the entire country; it could produce more than all the cotton crops, and pasture lands as large as the entire State of New York would still remain.

A line from first letter of name to entrance.

FIG. 5.—BIRD'S-EYE VIEW OF BUILDING



Villages of all Nations. Galleries and Fine Arts.

ıral Hall. Women's Building. United States Buildings.

Wooded Island.

State and Foreign Govt.

Fisheries and Deep Sea Aquaria. [Bld'gs, to North.

Manufactures and Liberal Arts Building, 44 acres.

ıntain.

U. S. Naval Ex-

Casino and Landing Pier. [hibit.

ter of building, will indicate location.

KING FROM THE LAKE

It is estimated that the arable lands of the west cover at least 900,000 square miles; there are 260,000 square miles of timber country, and in 1880 less than one-fourth of the pasture was occupied with more than 61 millions of live stock. It would seem as if the future destinies of the United States must be controlled from the west, the population of which by natural increase and by immigration, is growing with so much rapidity; where energy appears unbounded, and the wealth of the soil, as of the riches hidden beneath its surface, is inexhaustible.

A well-known American writer says "the unrivalled resources of the west, together with the unequalled enterprise of her citizens, are a sure prophecy of superior wealth. Already have some of the younger States outstripped their elder sisters of the east in individual wealth. . . . The west is destined to surpass in agriculture, stock raising, mining, and eventually in manufacturing. . . . Beyond a peradventure the west is to dominate the east. With more than twice the room and resources of the east, the west will have probably twice the population and wealth of the east, together with the superior power and influence which, under popular government, accompany them." These sentences, written some years ago, would seem to be already partially confirmed, and if the forecast be too sanguine and enthusiastic, the conviction is nevertheless forced upon the thoughtful observer, that if the head of the nation lie upon the Atlantic shore, the heart beats in the middle States, and the sinews and muscles are in the west, and it may also be safely predicted that however many rival cities may in the future contest the trade and prosperity created by this western development, with Chicago, the metropolis of the Great Lake region must continue to retain her pre-eminence.

It may help you to fix the location of the city of Chicago if you bear in mind that it lies as far to the west of London as Calcutta lies to the east; that it is on about the same latitude as Rome; and that though it is situated a thousand miles from New York harbor, when you reach it from the eastern seaboard, you have only traveled one-third of the way across the great American continent.

A glance at the outline map (fig. 1) will be sufficient to give you an idea of one of the reasons of the great and rapid growth of the

city. You will see that Chicago stands upon the shore of Lake Michigan, and nearly at the most southerly point of this freshwater inland sea. Probably you have little idea of the vast traffic that is carried on upon the great chain of lakes that stretch half-way across the continent and afford a direct water communication from the ocean to the remote western town of Duluth in Minnesota. Between Buffalo, which is the inland terminus of the Erie Canal, and the numerous towns that stand upon the extended mileage of the shore of the lakes, an incessant traffic is carried on, incessant that is, whilst navigation is possible, or for about nine months in the year. This traffic consists mostly of grain and minerals going east, and—in the other direction—of miscellaneous cargoes to supply the varied wants of the population in the great west. The vast farm lands and mining regions of Manitoba and Minnesota afford plenty of business to the steamers navigating Lake Superior, but by far the largest trade passes through Lake Michigan, and gravitates to Chicago, although Milwaukee and some few other towns are ports of no small importance. So large indeed is the marine trade of Chicago that the tonnage entering and leaving its harbor is nearly as great as that of New York, and half as much as that of the port of London. The route for steamers (some of which are of as much as three thousand tons) from Buffalo to Chicago lies across Lake Erie, through the short Detroit River, the Lake St. Clair and the St. Clair River into Lake Huron; thence by the northwest to the point where the waters of this lake mingle with those of Lake Michigan; and then southward along the whole length of the latter to Chicago.

The actual tonnage that passes up and down the Detroit River during the nine months when the navigation is free from ice is much greater than the traffic upon the Suez Canal throughout the year, and as a very large proportion of this tonnage enters and leaves the port of Chicago this comparison will give you a very fair idea of its importance as a maritime city. It is indeed the collecting and distributing center of the middle and middle western States of Indiana, Illinois, Wisconsin, Iowa, Missouri, and of the great corn and cattle lands lying still further west.

We may digress here for an instant to call your attention to the section of the great lake chain that is shown beneath the map (see

fig. 2). You will notice that with the exception of Lake Ontario, the water levels stand at a high elevation above that of the sea; Huron, Michigan, and Erie, are all of them about 581 feet above the sea level; Lake Superior is still higher, this difference of level being overcome for navigation by means of a famous canal and locks. The difference of level between Lake Erie and Lake Ontario is made up by the rapids of Niagara River and by the great Fall; the total length of the river above and below the Falls is 37½ miles; the difference of level is 326 feet, of which 160 feet is made at one jump by the great waterfall, and the remainder by the rapids above and below it. Evaporation apart, the Falls of Niagara constitute the sole means of relieving the great drainage area that discharges into the chain of lakes—an area twice as great as that of Great Britain and Ireland.

But the outflow from the lake basin is only about half the quantity of rain that falls upon it, the rest being accounted for by evaporation. The total volume of water in the lakes is about 6,000 cubic miles, but this is a figure which conveys little meaning, and it is more to the purpose to remember that if the supply to the lakes from rainfall was suddenly cut off, the great torrent of Niagara could be maintained with unabated volume and in all its appalling majesty from these vast reservoirs for a period of a hundred years. But Niagara was not always the outlet of these inland seas. Away back in geological time the overflow from the lakes, which doubtless have greatly changed in size and form since then, was southward from Lake Michigan into the Mississippi basin. Sudden upheavals aided by gradual change, created a barrier to this southern outfall, and corresponding changes to the north so altered the levels as to produce the order of things with which we are familiar. But the barrier just rererred to, and the summit of which is only a few miles to the south of Chicago, is of a very insignificant height, and at the present time a project is being matured to cut through this barrier, and to construct a broad and deep ship canal, which will restore to some trifling extent the old *regime;* which will create an outflow for Lake Michigan into the Mississippi, and convert Chicago into a seaport from the south as well as from the north.

FIG 1.—OUTLINE MAP OF GREAT LAKE CHAIN.

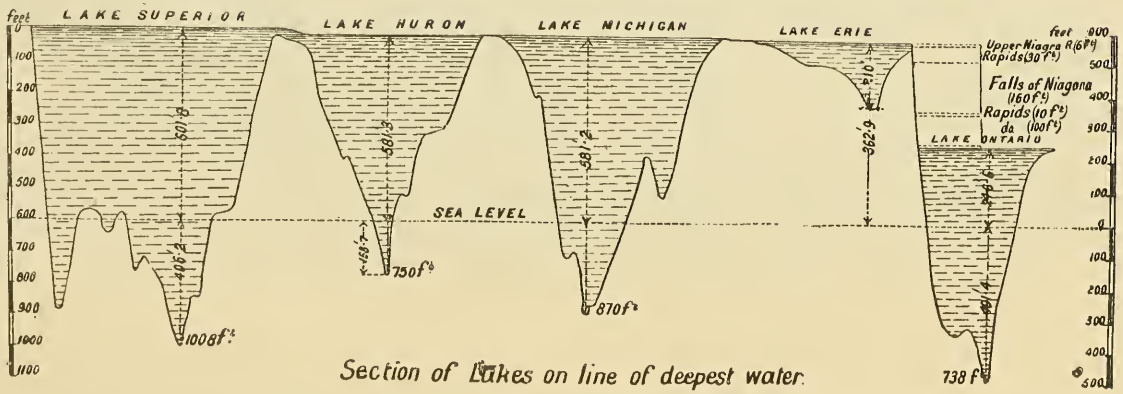


FIG 2.—SECTION OF LAKES, SHOWING RELATIVE LEVELS.

II.—THE CITY OF CHICAGO.

Before referring to the Columbian Exposition, it may prove of some interest to you this evening if I attempt to give a slight idea of the appearance and general characteristics of the city of which we are now hearing so much. It is said that a United States engineer officer, at the beginning of the century, who was employed upon the survey of the great lakes, reported that there was only one spot on which it was impossible to build a city on the banks of Lake Michigan. It is just on this spot that Chicago is situated. There was, however, good reason for this assertion. A century ago the pathless wilderness terminated here in swamp and morass—land mingling with water like an unfinished fragment of creation; the sluggish, fever-laden creek, fed from the lake or from the inland water shed, and altering the direction of its current with the season and the water level, spread over the adjacent low-lying lands and helped to complete the scene of hopeless desolation. But even two hundred years since, this forbidding stream had its uses. The spirit of successful colonization was then active in France, stimulated and carried forward by the fervor of religious enthusiasm that drove earnest men into the remote places of the earth, bearing aloft the cross and planting strange truths in savage minds. These were the explorers and pioneers, who have left traces of their work behind them through the broad lands that separate the lakes from the Gulf of Mexico; whose monuments remain in the names of cities and villages throughout Illinois and Louisiana, and in those of many of the principal streets of the City of Chicago.

Marquette and Joliet—priest and soldier—discovered Chicago River late in the seventeenth century, and tested its usefulness as a way of reaching the Mississippi by the portage over the low divide that opposes a barrier to the chain of lakes from discharging into the Gulf of Mexico. The first survey of the district was made by Joliet in 1673; his companion died of malaria after a brief attempt to proselytize the local Indians. In these early times the name of the site was

much the same as it is now; it had two meanings, according to whether the word was used by one or other of the tribes that frequented the unalluring spot: "Onion" or "Pol cat." The fate of Marquette appeared through several generations to serve as an inducement for others of his devoted calling to seek malarial martyrdom on the banks of the Chicago Creek; and in their wake followed the traders, to traffic with the natives, but not to stay. The first permanent resident appears to have been a fugitive slave, who in the course of time did quite a handsome business as a fur trader. Meanwhile troublous times were the portion of North America. Wars with the Indians; French, Colonial, and British wars; and, finally, the revolt against English despotism, that laid the firm foundation for a great nation.

It was only after the genius of Washington had brought the War of Independence to a triumphant conclusion, that the site of Chicago attracted any attention; this was prior to the acquisition of Louisiana by the United States, through purchase from France.

British influence among the Indians around the lakes was strong, and was exerted to the damage of the new Republic. In the words of an American writer: "It became necessary, with the acquisition of new territory, that the United States should make some demonstration of its strength, in order to counteract the pernicious effects of its tactics." This demonstration took the shape of a fort that was built in 1804, and formed a nucleus for a small body of traders and other hardy pioneers to gather round it for mutual protection. So matters remained till the war of 1812, when a wholesale massacre of the garrison and the handful of settlers, took place; the fort and dwellings were destroyed, and the silence of the wilderness was restored. Two years later, however, Fort Dearborn was rebuilt, the power of the Indians was broken, and the settlement was again attempted, this time with success, so that when—in 1818—Illinois was admitted as a State into the Union, Chicago was quite a thriving village. Civilization—embodied by the tax collector—appeared in 1823, when on behalf of Fulton County, in which Chicago was then situated, the sum of $11.42 was obtained, showing that the rateable value of property at that time was less than £500. The real founders of Chicago appear to have been the

Illinois and Michigan Canal Commissioners, a powerful corporation early in the century, and who possessed powers to lay out towns on the lands that had been assigned to them by the Government. Thus it came about that "Fort Dearborn settlement" passed out of existence, and the town of Chicago was called into being. The original plan of the new town was issued on the 4th of August, 1830.

The history of the first few years of Chicago is that of all new settlements in the wilderness, with the exception perhaps that its progress never received a check. In 1837, the first census was taken, when it was found that the population was upwards of 4,000, each member of which was ambitious to be called a citizen; so it came to pass in that year Chicago was raised to the dignity of a city. Since then its growth has been phenomenally rapid, but it would occupy too much space, and be beside the present purpose were I to attempt to sketch its history; I will, therefore, pass on at once to notice in a few words the fire of 1871, which destroyed more than three square miles of buildings, and rendered 98,500 persons homeless. It is claimed that this—the most gigantic conflagration on record—was caused by the hind leg of a cow, which kicked as she was being milked in a stable, and upset a kerosene lamp; the straw thus ignited set fire to the building and the flames spread with a rapidity which defied all the efforts of the fire department to check; in a few hours it became evident that the businesssection of the city was doomed, for the wind was blowing a gale and forced the fire forward with irresistible heat and fury, devouring granite buildings and wooden shanties as it was forced forward by the storm. The disaster commenced on the evening of Sunday the 8th of October, and by one o'clock the following morning, a traveling column of flame had reached and swallowed up the Chamber of Commerce building and the Court House, the bell of which continued to toll until the belfry fell. Then traveling furiously eastward it continued to lay many other noble buildings in ashes.

Meanwhile, a second column of fire had been equally active, and when this joined the first one, the work of destruction went forward at an increased rate, while the ruined and homeless inhabitants could only look on, powerless to avert the devastation, and paralyzed with terror. It was only at the Lake and the northern limits

of the city that the fire burned itself out for lack of fuel. The total area devastated was nearly three and a third square miles; there were 17,450 houses destroyed; about 200 people killed; and the value of property lost was nearly forty millions sterling. It is impossible to realize the horrors of that period, or the dispair that followed with the realization of the general ruin that was caused. Although twenty years have passed since that eventful Sunday, citizens of Chicago who went through the ordeal, speak of the great fire as if its minutest details had been burned into their memories by the flames; and still fresh in their recollection is the succor that poured in to the fated city without an hour's delay. From all parts of the United States came help, in the shape of long lines of relief trains loaded up with food and clothing and other necessities of life for the thousands that had been thus suddenly stripped of all. And not from the United States alone, for it is pleasant to remember that aid came from England also, with a lavish hand, and the citizens of Chicago remember that too, today, and the recollection will help to make the welcome warmer to Englishmen who visit Chicago in 1893.

The ruins were not cold before the work of reconstruction began, and merchants who a week before had carried on vast business in granite warehouses, began the world again in wooden sheds built on the smoking ashes of their former wealth. When energy such as this was shown, you will not be surprised to know that the traces of the great fire were soon obliterated, and that ten years after it occurred, there were but few ruins to indicate that it had ever taken place. Modern Chicago dates from this catastrophe, and as soon as the immediate results of the disaster were overcome, the new era of construction, of which the city is so proud, commenced.

Today Chicago covers an area of 180 square miles, it has a population of over 1,200,000; there are 2,200 miles of streets within the city limits; there are 395 miles of street railways; and over 2,000 acres of public parks; 35 distinct railroad companys have station accommodation in the city, and it is claimed that these railroads, with their branches and immediate connections, have a total length of more than half the mileage of all the railways in the United States. The Chicago River and its branches are crossed by 61 bridges, all, or nearly all of which, are turning bridges, so as to accommodate

the constant movement of ships up and down the river. There are, in addition, several tunnels, by which the street traffic can pass without interruption, and this means of communication is on the increase.

Like most American cities, Chicago is laid out on the convenient but monotonous rectangular system. Its most important thoroughfare is State Street, which runs from north to sonth for a distance of 18 miles, or only three miles less than the distance between London and Windsor. To give you a further idea of the size of the city, I may add that 87th Street, which runs from east to west, across its widest part, is 10½ miles long. Some day the ring of boulevards will be the glory of Chicago, and will add another to her many claims of her superiority over the remainder of American cities. Some of these really magnificent roads are completed, and are lined with miles of handsome residences that attest the wealth and refinement of the citizens. When completed, this succession of boulevards will connect the 28 parks, which give to Chicago her favorite title of the Garden City; I cannot say what will be the lenght of this system of boulevards, but it will certainly be longer than any other ring of boulevards in the world. The plan (fig. 3) gives some idea of the general arrangement of the city; of its lines of streets; its parks and boulevards; the river and its branches; and it shows quite clearly the relative position of the Exposition site to the center of the city, which may be taken as approximately in the vicinity of Van Buren Street.

The number of houses added to Chicago last year would, if placed side by side, have a solid frontage of 51 miles in length. They numered 11,640 structures, and cost nearly 10 million sterling; this will give some idea of the rate of development of the city.

There are several peculiarities connected with the buildings of Chicago to which reference may be made, as I think they are without parallel. One of these is the curious custom of moving houses, generally from a costly to a less expensive site. This operation is not by any means exceptional, as will be seen from the fact that during the year 1890 no less than 1,710 houses, with a total frontage of 33,922 feet, or about six miles, were shifted from one location to another. Most of the buildings so moved were of timber, but

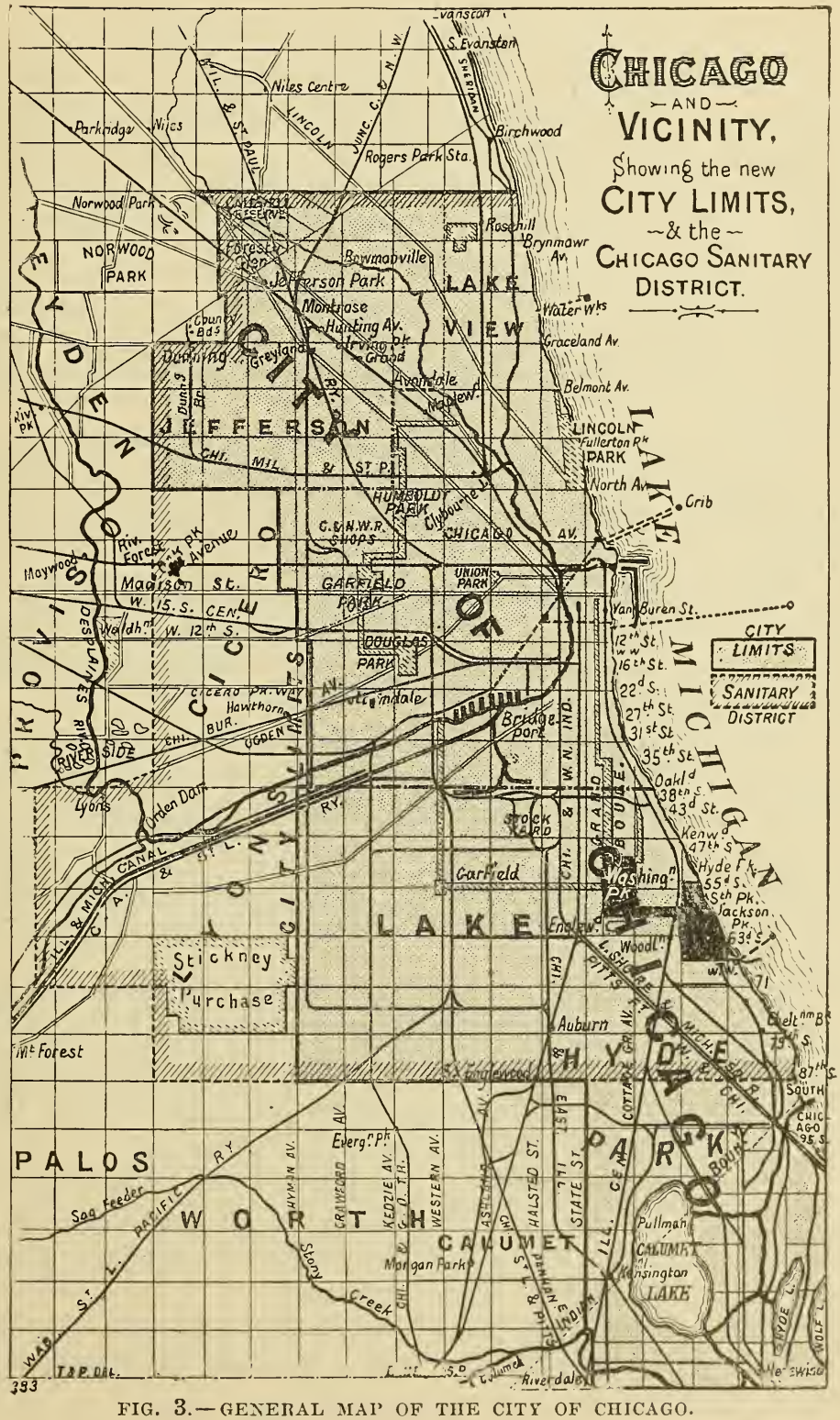


FIG. 3.—GENERAL MAP OF THE CITY OF CHICAGO.

many of them were of brick, and some of them no less than four stories high. The average frontage for these transported dwellings was about 20 feet. The profession of house-moving is a very old one in Chicago, as is also that of raising structures bodily to a sufficient height for allowing an additional story to be added at the ground level. It would, however, be a task beyond the powers of the most enterprising contractor to shift or raise the modern typical buildings, which claim to be larger and higher than any in the United States; and it would appear that there is good reason for this claim.

Take for example the Auditorum, of which Chicago is justly proud, it is a hotel, theater, to seat 6,000 people, stores, offices, and weather signal station. Its total street frontage 710 feet, with total height 270 feet.

The Masonic Temple, 117x114 feet, with a height of 265 feet, divided into 20 stories, is constructed round a central courtyard, the first 14 or 15 stories are arranged as stores, the upper part being reserved for Masonic purposes.

The Pullman building, a nine story structure, with a frontage of 170x120 feet. Its distinguishing feature is a large open court towards the street and a handsome monumental entrance in connection with it. The first story is of red granite, and the upper portion of brick and terra cotta. The Pullman Company has its main offices here. The top floors are handsomely fitted up as living apartments.

I would mention still another, the "Schiller" building. This new and magnificent structure contains 250 offices, a theater to seat 1,400 people and a small concert hall; the interior of the theater is entirely free from pillars. There are eight stories of business offices carried on trussed steel girders over the ceiling of the theater.

There are many others. Notably the new Chamber of Commerce, with 500 offices, the Rookery, more than 600, and the Women's building with 350 and many others. Of course elevators are used in these and all similar structures.

There are large numbers of such structures in the city, which impress by force of their size, rather than by their architectural beauty, and it is refreshing to the uneducated western eye to turn

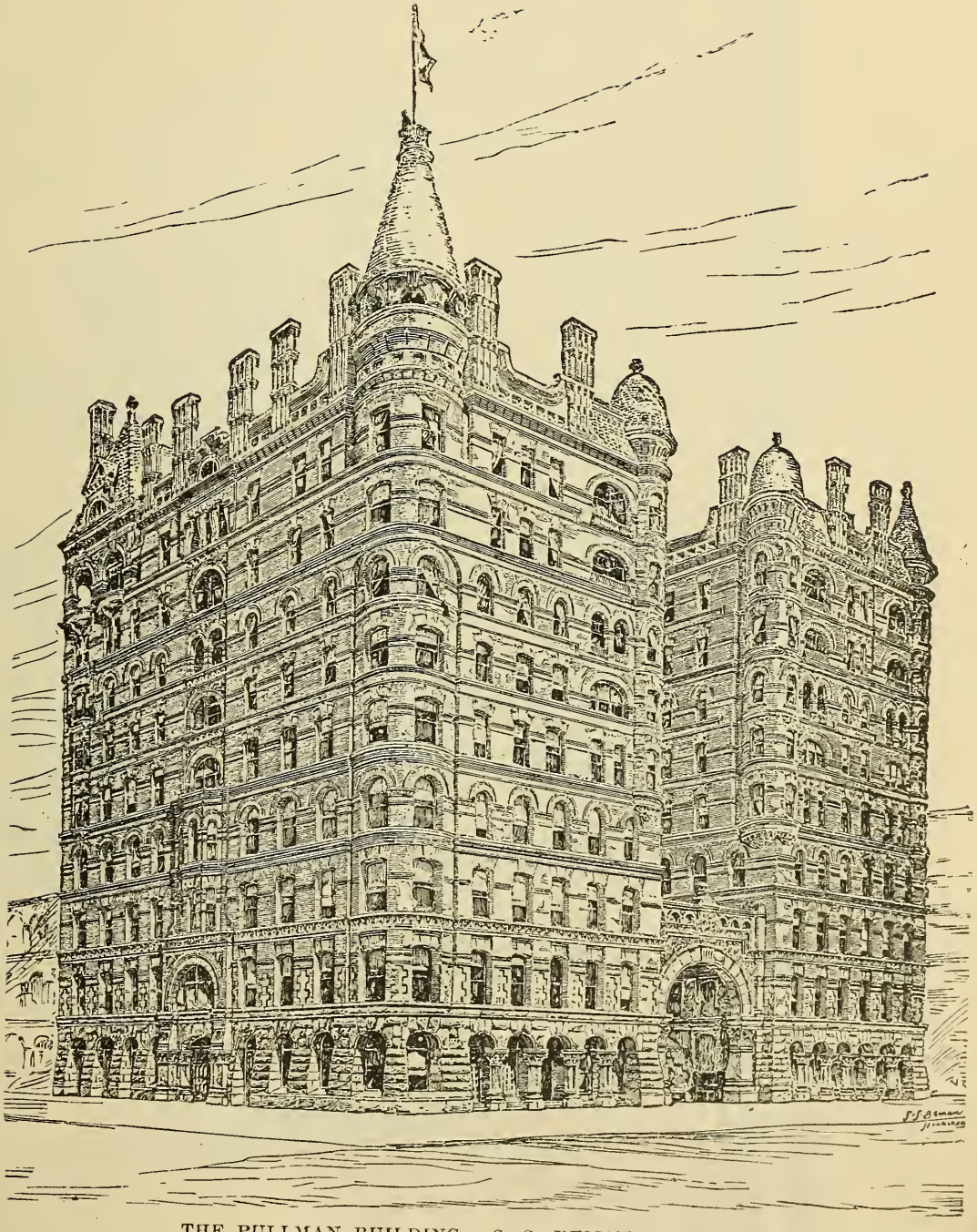
to the older structures of importance, such as the City Hall and the Post Office buildings, which latter is to be pulled down ere long, and is referred to in the most recent guide to Chicago as "a great structure, but old-fashioned." Its erection was commenced after the great fire in 1871. The recent great buildings in Chicago are essentially engineering structures, not only as we have seen with regard to a system of construction, but also in respect to internal appliances. In all of them a very large amount of steam power is required for numerous purposes, such as electric lighting, heating and ventilation, working elevators, lifting sewage, etc.

No sketch of Chicago would be complete without a reference to the somewhat ghastly industry which is the corner-stone of its prosperity—the great stockyards and packing works. To give some idea of the extent of this business, it may be mentioned that during 1890 more than 2,000,000 of cattle, and nearly 6,000,000 of hogs were slaughtered; 311,557 railway cars were needed to bring these animals to the stockyards, and their estimated value was about £46,000,000 sterling

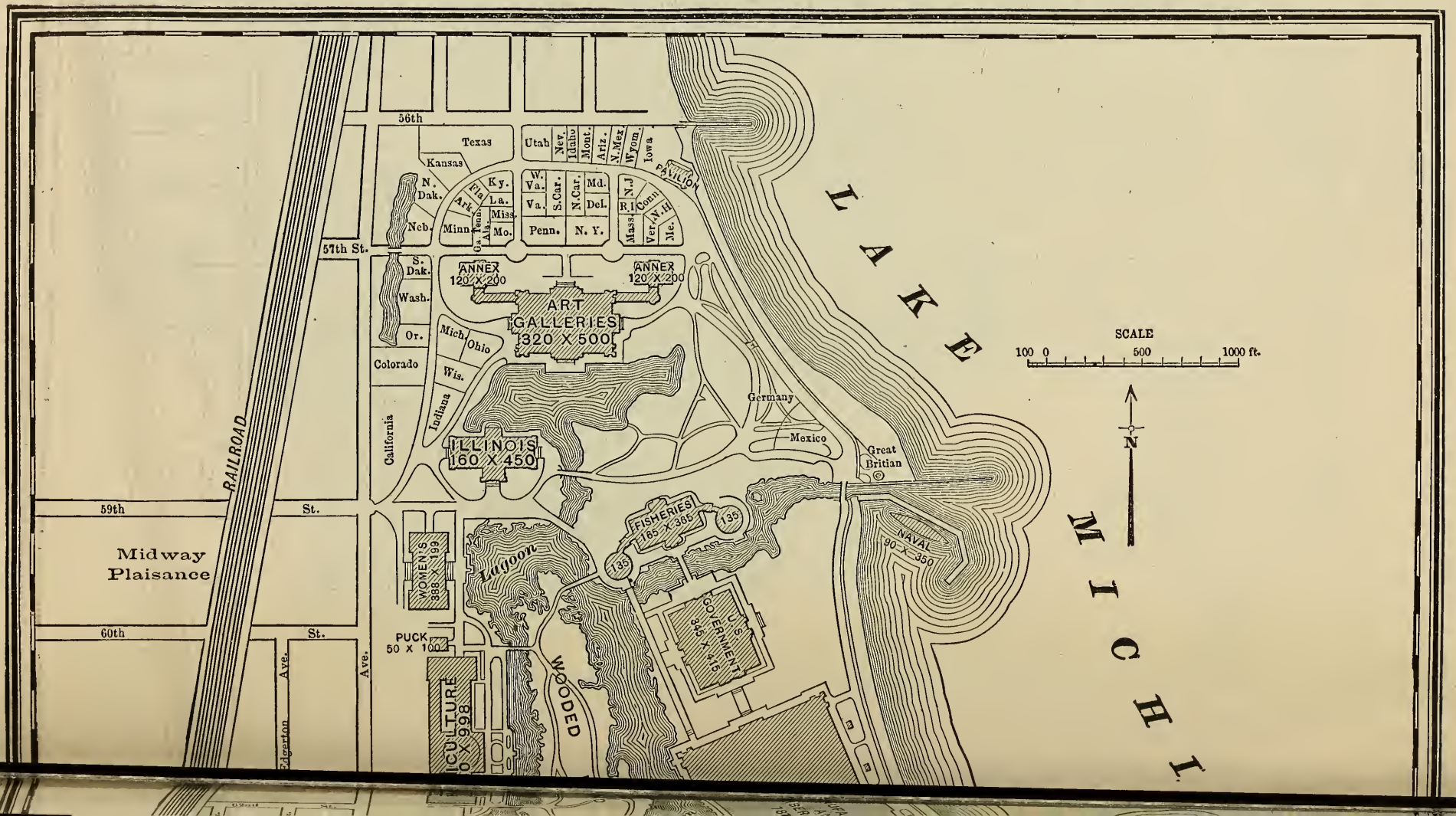
The principal stockyards are situated about five and a half miles from the center of the city, in a southwesterly direction; they were opened in 1865, and occupy an area of 400 acres, half of which is devoted to the yards, while the remainder is occupied by railroads and sidings.

Accommodation is provided for 20,000 cattle, 120,000 hogs, and 15,000 sheep; this stock is brought from all parts of the country in cars, containing on an average, 20 cattle, 70 hogs, or 100 sheep. The business of the yards is to receive the stock and take charge of it until it changes hands, an operation which is very rapidly performed, and occupies about 1,000 men employed by the Stockyard Company, a similar number in the service of 120 commission merchants, and about 300 buyers. As soon as the animals have been sorted, classified and weighed, which latter operation is performed on 50-ton scales, they are turned over to the buyers, who distribute them to their destination—the slaughter house. Here the labor is minutely subdivided, and the rapidity with which the practiced hands perform their work is astonishing; almost every part of the animal is utilized for some purpose or another, and the carcasses, after

THE AUDITORIUM BUILDING. ADLER & SULLIVAN, ARCHITECTS



THE PULLMAN BUILDING. S. S. BEMAN, ARCHITECT.


56th
57th St.
59th St.
60th St.
Midway Plaisance
RAILROAD
Edgerton Ave.
Ave.
Texas
Kansas
N. Dak.
Neb.
Ky.
Fla.
La.
Ark.
Miss.
Minn.
Mo.
Utah
Nev.
Idaho
Mont.
Ariz.
N. Mex.
Wyom.
Iowa
W. Va.
Va.
S. Car.
N. Car.
Md.
Del.
Penn.
N. Y.
N. J.
R. I.
Conn.
Mass.
Ver.
N. H.
Me.
PAVILION
S. Dak.
Wash.
Or.
Colorado
Mich.
Ohio
Wis.
Indiana
California
ANNEX 120 X 200
ANNEX 120 X 200
ART GALLERIES 320 X 500
ILLINOIS 160 X 450
Germany
Mexico
Great Britian
LAKE MICHI.
SCALE
100 0 500 1000 ft.
N
FISHERIES 165 X 365
135
135
NAVAL 90 X 350
Lagoon
WOMEN'S 388 X 199
PUCK 50 X 100
CULTURE 0 X 998
WOODED
U.S. GOVERNMENT 345 X 415

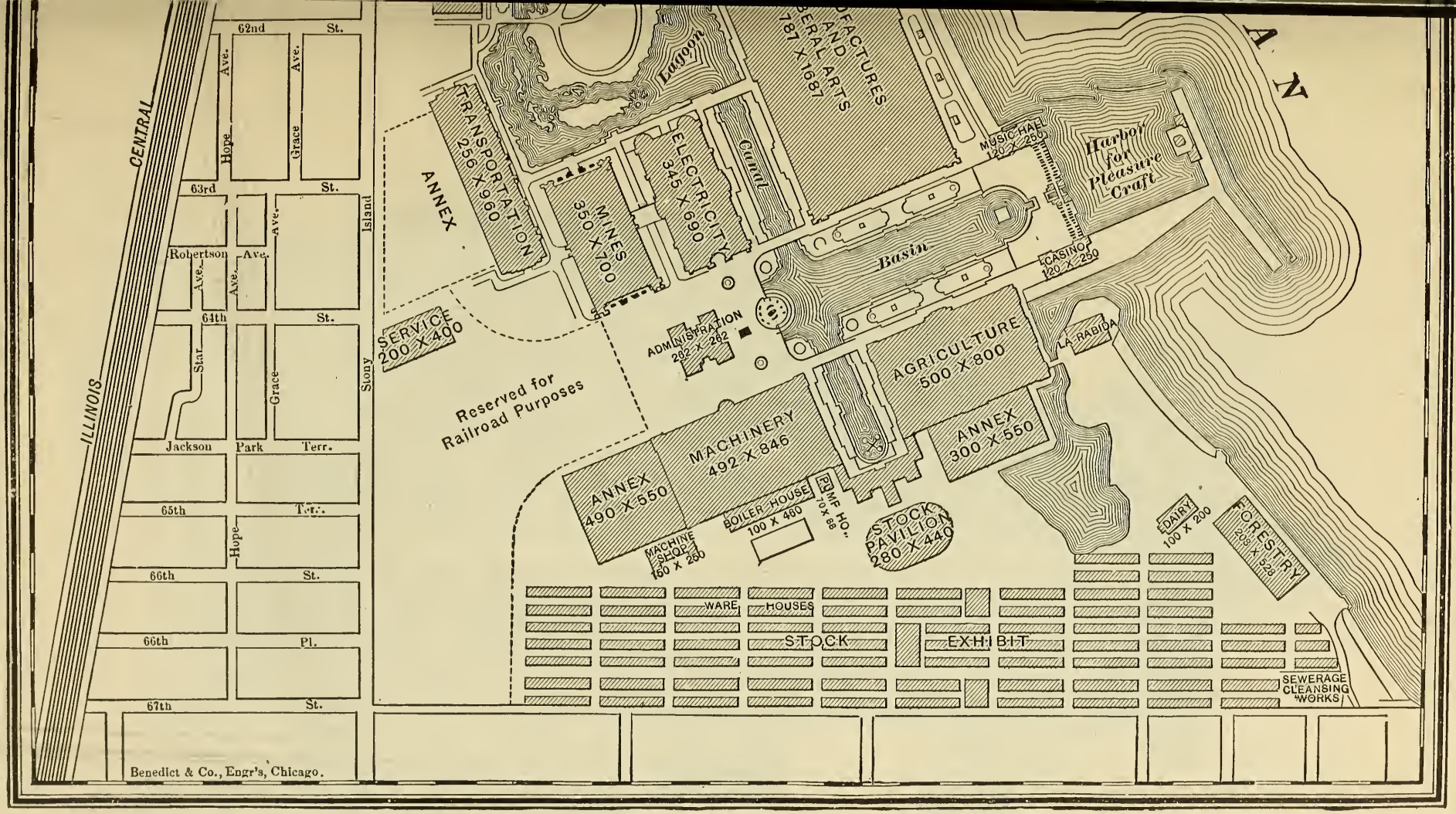
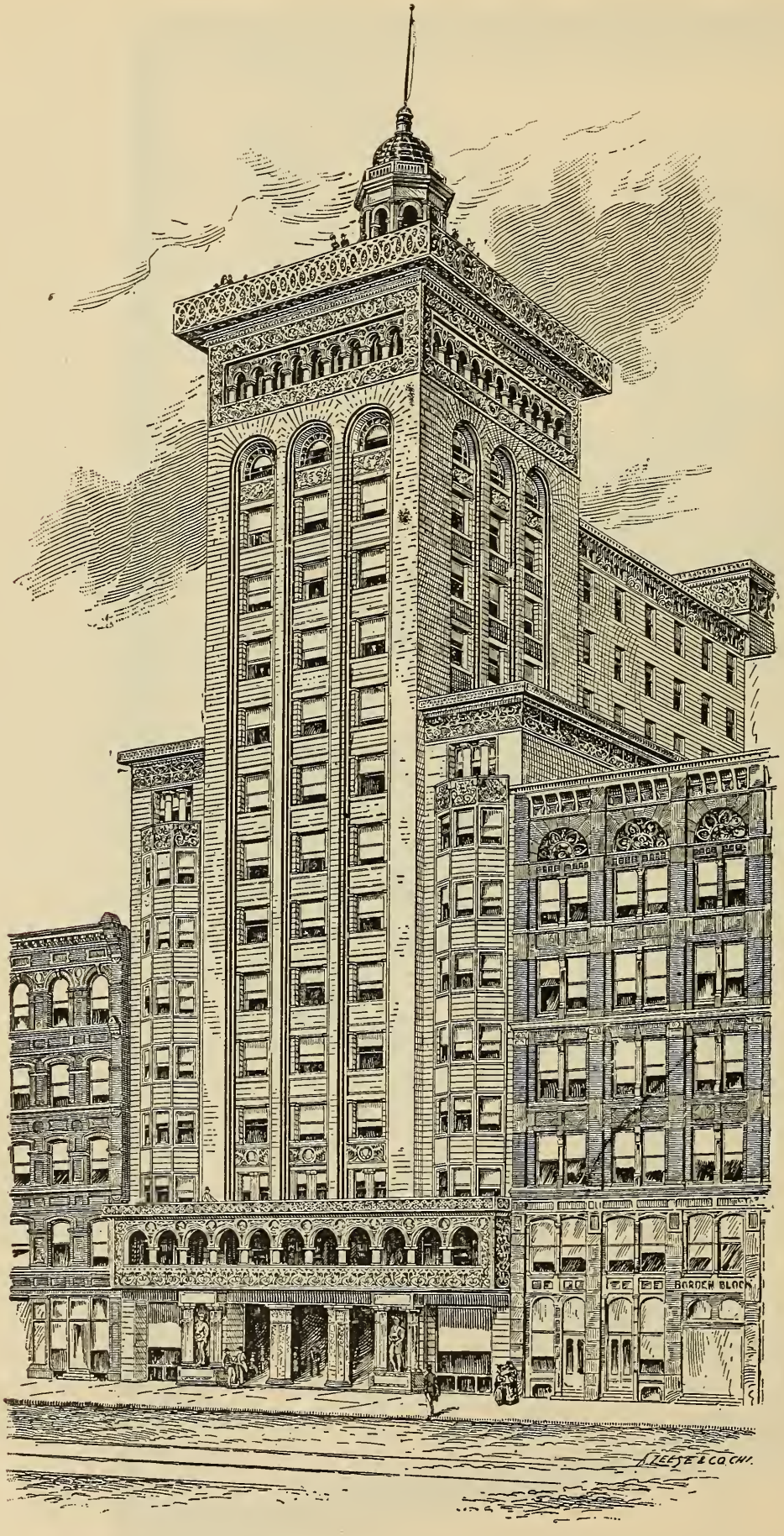


FIG. 4.—OUTLINE MAP OF BUILDINGS AND GROUNDS.



THE SCHILLER BUILDING. ADLER & SULILVAN, ARCHITECTS.

having been properly prepared, are taken upon tramways into the refrigerating rooms, where they are kept at a temperature of about 60 degrees. From here they are taken onto the train loading platforms, cut into quarters and placed in the refrigerator cars, whence they are distributed all over the country or shipped for export.

After the packing and slaughtering industry comes the grain trade of Chicago. From the agricultural regions of the Middle and Western States the grain is brought by train or by lake to Chicago, where it is stored in elevators for distribution all over the country. There are 27 grain elevators in the city, with a total storage capacity of about 29,000,000 bushels; the largest of these great warehouses, belonging to the Armour Elevator Company, contains 2,000,000 bushels; the average capacity of the others range from 1,000,000 to 1,500,000 bushels.

The shipments of cereals from Chicago during 1890 were in round figures, 12,000,000 bushels of wheat, 90,000,000 bushels of corn, 71,000,000 bushels of oats, and 12,000,000 bushels of rye and barley. About 8,000,000 bushels of this total were distributed by lake shipments, and this trade occupied no small portion of the vessels entering and leaving the harbor, and the total tonnage of which was 8,750,000; the number of vessels engaged in this trade being about 9,000. As all this very extensive shipping business is concentrated on the Chicago River and its branches, some idea may be gathered of the constant movement up and down the stream, and of the perpetual opening and closing of the bridges to the great hindrance of street traffic. The river banks are lined with wharves, of which there are not less than 41 miles. It is very evident that if this branch of carrying trade increases in the future, as it probably will, additional accommodation will be required, and by some means the lake front will have to be utilized for loading and unloading vessels.

I have attempted to give only a few particulars of the conspicuous characteristics of the city of Chicago. To enter into detail would carry this paper far beyond its proper limits, and would still fail in conveying accurate impression. No description, in fact, would do justice to this city of 1,200,000 inhabitants, almost everyone of whom appears endowed with preternatural activity; which owns a

street 18 miles in length, almost a dead level for the whole distance, and on which are houses 20 stories high ; whose traffic is as noisy as it is ceaseless, both on the smooth-running, rope-worked railways and the ill-paved, jolting roads ; where the roar of the locomotive and the scream of the lake steamer emphasize the fact that repose and silence are unknown, even in the dead of night ; where a pall of smoke, the outpouring of a thousand factories and of ten thousand dwellings, remind the Englishman of home. Picture all these things, and you can form some idea of Chicago, which has been raised in 60 years, by the indomitable energy of Americans, to the rank of the sixth city in the world in point of population.

Extend the city along a frontage of 22 miles upon the shore of Lake Michigan ; imagine parks and waste land, factories, fine buildings and hovels spreading over this extended front ; add six miles of railway skirting the lake in the busiest part of the town, and remember that this vast succession of streets and houses is built upon the shore of a tideless sea, alive with ships, now sailing over waters as smooth and bright of hue as those of the Mediterranean ; now fighting their way to or from port, in storms more sudden and severe than the Mediterranean ever knows.

Great as Chicago is, the period of her true greatness has yet to come. Its commencement will dawn when her inhabitants give themselves leisure to realize that the object of life is not that of incessant struggle ; that the race is not always to the swift but rather to those who understand the luxury and advantage of repose, as well as sustained effort.

Real greatness does not depend on length of streets, nor height of houses, nor even on colossal fortunes ; but rather on the wise application and equally wise conservation of energy and intellect. When Chicago ceases to be a city of Perpetual Haste, and adopts the pace which will be inevitably set for her by time, the names of her great workers will not be erased so early from the book of life, but will be preserved to give their beloved city many more years of real useful work. At present, I think there are few old men in Chicago, because they have no chance to grow old ; and giving themselves insufficient time for leisure, they have as a necessary consequence, little opportunity for the higher culture which is born of

leisure. Of course, I am speaking of the general rule, to which there are many brilliant exceptions.

It is probable that the Columbian Exposition of 1893 will be the birth place of this new phase of greatness for Chicago, for it will be full of every possible object lesson, and will bring home to the inhabitants of the city, more forcibly than any other event could do, the fact that there is more in heaven and earth than had been dreamed of in their philosophy.

III.—GENERAL PLAN OF BUILDING.

The Columbian Exposition is situated seven miles from the center of the city, a distance that will be provided for by trains, tramways, and especially by large steamboats (see map, fig. 3). The site comprises Jackson Park, the Midway-Plaisance, and Washington Park. Of these only the two former will be used for buildings, the Midway-Plaisance—a long strip of land about 600 feet wide and a mile long, being reserved for a Bazaar of Nations, a significant title, from which (bearing in mind the Rue de Caire at the Paris Exhibition of 1889) great and varied entertainment may be expected. This Midway-Plaisance is within ten acres the size of St. James Park. The whole of Jackson Park, which is as large as Hyde Park and Kensington Gardens put together, will be occupied wholly with the buildings and grounds. The main structures will cover more than 150 acres, and a space larger than St. James' Park and the Green Park will be roofed over. Washington Park will be reserved for some unforeseen extension, or more probably will be used only as an annex to the grounds not occupied by the buildings in Jackson Park. The annexed plan (fig. 4) gives a very fair idea of the arrangement of the Exhibtion. We will take a rapid glance at this plan so as to gain an idea of the general arrangement adopted. You will notice that the plan runs almost north and south; that the Exhibition grounds have a long frontage—some miles long, in fact—on Lake Michigan, an advantage that gives a special charm to the site; and that towards the lower end of the grounds, a pier stretches far out into the lake, and is so arranged that it will serve as landing

stage, promenade, and breakwater, to enclose a large, smooth-water harbor for the smaller marine exhibits.

From the shore end of this pier extends westward a long and very wide road—the grand avenue of the Exhibition. In the center of this road is a great basin that forms a part of the extensive waterways, to be made both for decoration and for the circulation of fleets of omnibus boats, which will be driven by electricity, and constitute one of the important means of transporting visitors. On each side of the Grand Avenue are the facades of the main buildings. We shall have more to say about these buildings presently, but meantime I should like to mention that each is the design of a different architect, for the Exposition Executive has been so broad-minded as to take the designs of architects from all parts of the United States—from New York, from Boston, from Kansas City, and from other towns as well as from Chicago. This grand perspective of monumental facades may therefore be taken to illustrate the present condition of the science of architecture in America. At the extreme end of the avenue is the Administration Building, and in front of it the basin is split into a canal to the right and left, on the one hand running for a short distance only, and on the other extending into the system of ornamental water just spoken of. Fig. 10 gives a good idea of the appearance that will be presented by the short left-hand branch just spoken of, with one front of the Machinery Hall on one side and of the Agricultural Building on the other; the two being connected by a fine classic colonnade, and a great obelisk in front. To the south of the Grand Avenue are the Agricultural Buildings, with their stockyards and annexes; a Forestry Building; and the Machinery Hall with its annexes. These two buildings are to be connected by a classic colonnade, as indicated on the plan referred to above. On the north of the Grand Avenue are the buildings for the Industrial and Liberal Arts, and those for Electricity and Mines and Mining.

Behind this range of short-lived palaces come many more buildings—the Transportation Hall, the Great Conservatory, the Women's Building, the Pavilion of the State of Illinois, the Art Galleries. North of these latter is a large reserve set aside for the various States of the Union, and on which it is expected that every

State will erect a pavilion to serve as offices and as a special exhibit. Returning southward by the lake shore we come to a second large reserve to be allotted to the use of the foreign nations exhibiting, on which they may erect their buildings to serve as their official headquarters.

You will see by the plan (fig. 4) that the best site of all—that facing direct on the lake—has been placed at the disposal of this country. Beyond this area are the Fisheries Building and the United States Government Building, and belonging to it on the left is a very interesting model that forms the exhibit of the Navy Department. After this we get back to the Industrial Building, and thence to the pier and Grand Avenue, where we started. I forgot just now to tell you that outside the Exposition grounds to the north it is proposed to erect the Columbian tower, a structure 150 feet higher than the Eiffel, from a design by the eminent engineer, Mr. George S. Morison. It is not certain, however, that this will be built.

We can now form a general idea of the scheme of the Columbian Exposition, and when we remember that the roofed-in portion will cover 150 acres, or St. James' Park and the Green Park combined, and that these buildings will not be sheds, but as you will see presently, magnificent—though temporary—structures, both as regards their engineering and their architectural features, you will not be surprised that the estimated cost—which we all know is not always quite the same thing as the actual cost—is a million and half sterling. Fig. 5, a double plate, will give an accurate idea of the general appearance of the Exposition buildings and grounds, and indicates the appearance of the Exhibition as seen from the lake.

Mr. D. H. Burnham, chief of construction, has entire charge of the construction of the magnificent buildings to be erected for the Columbian Exposition, and is eminently fitted for the responsible position, both as an architect and a man of great executive ability.

After this hurried glance over the plan, I propose to give a few particulars of the principal buildings.

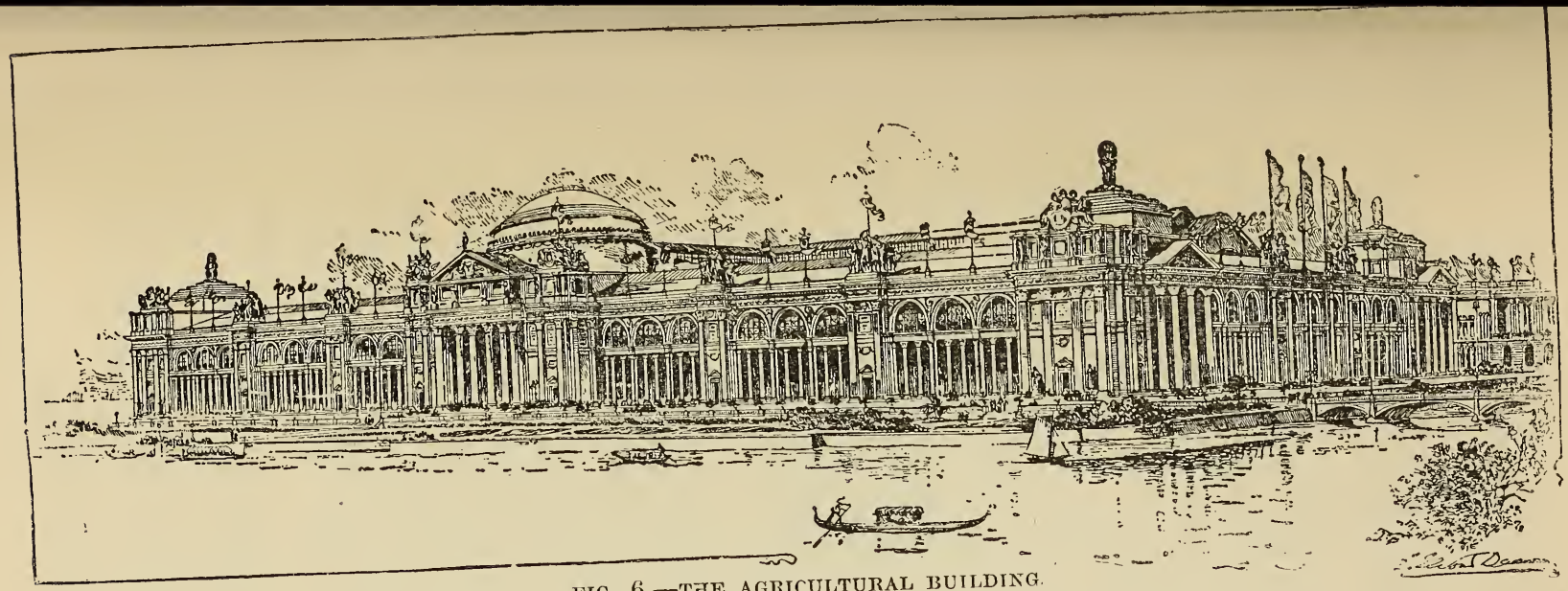


FIG. 6.—THE AGRICULTURAL BUILDING.

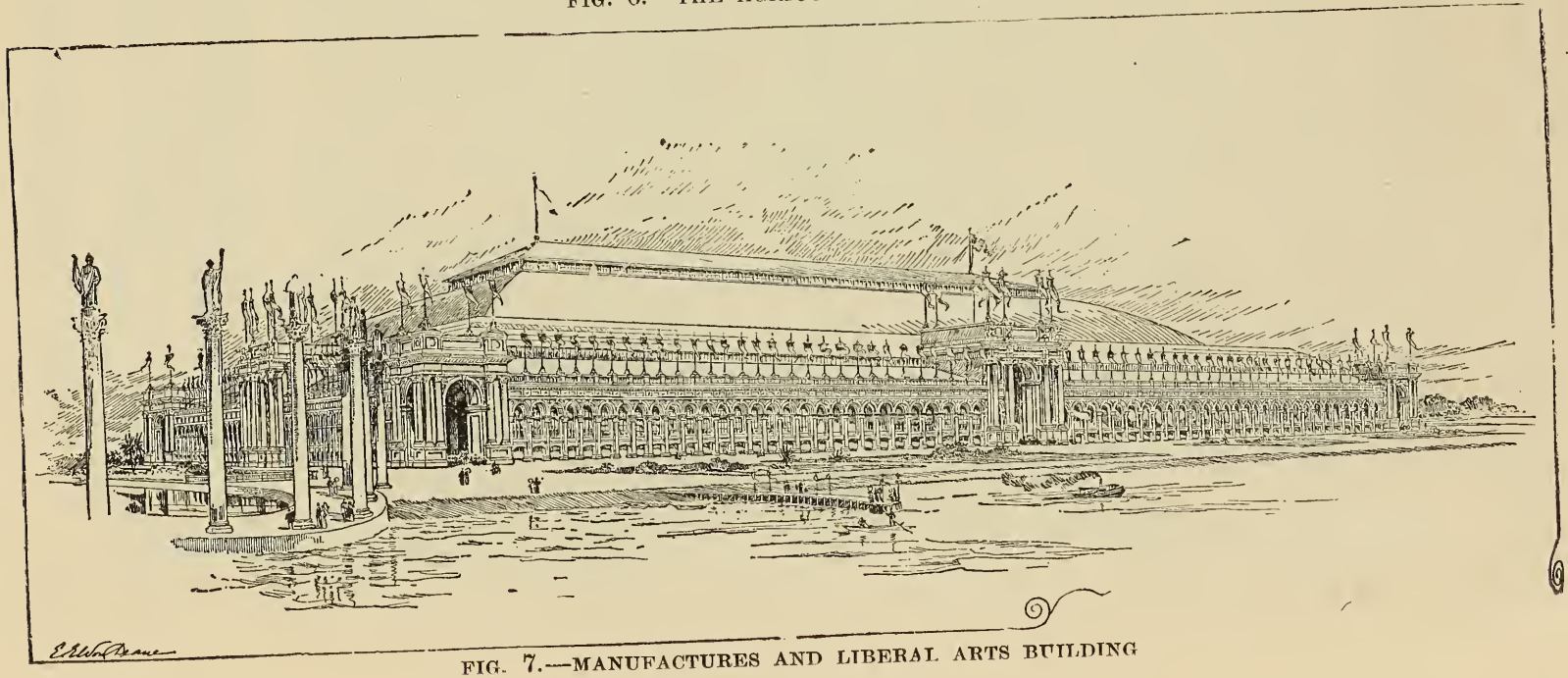


FIG. 7.—MANUFACTURES AND LIBERAL ARTS BUILDING

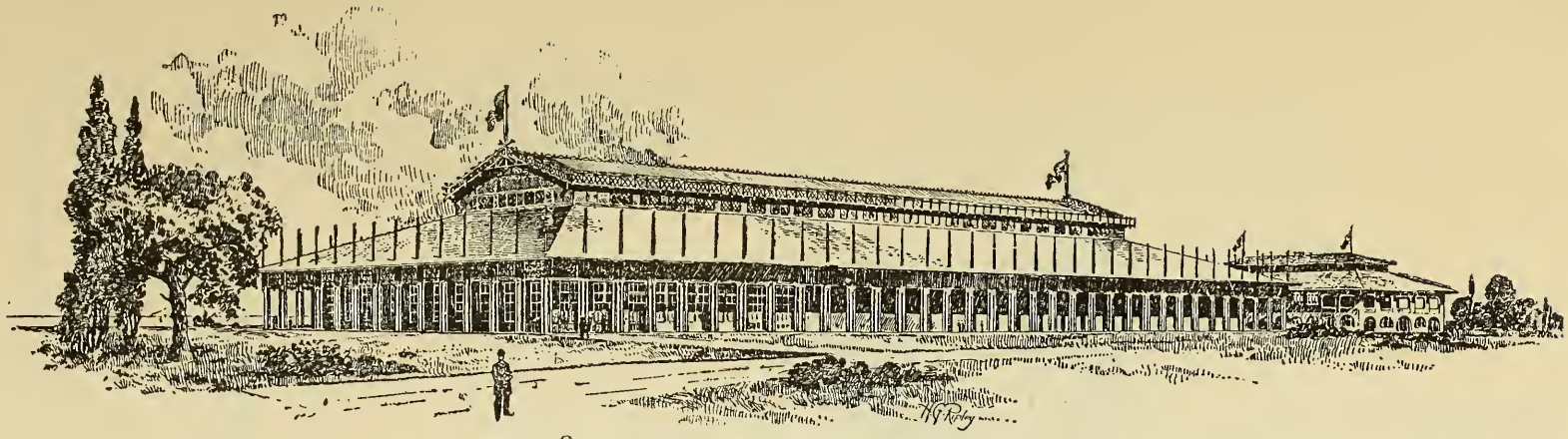


FIG. 8.—THE FORESTRY BUILDING.

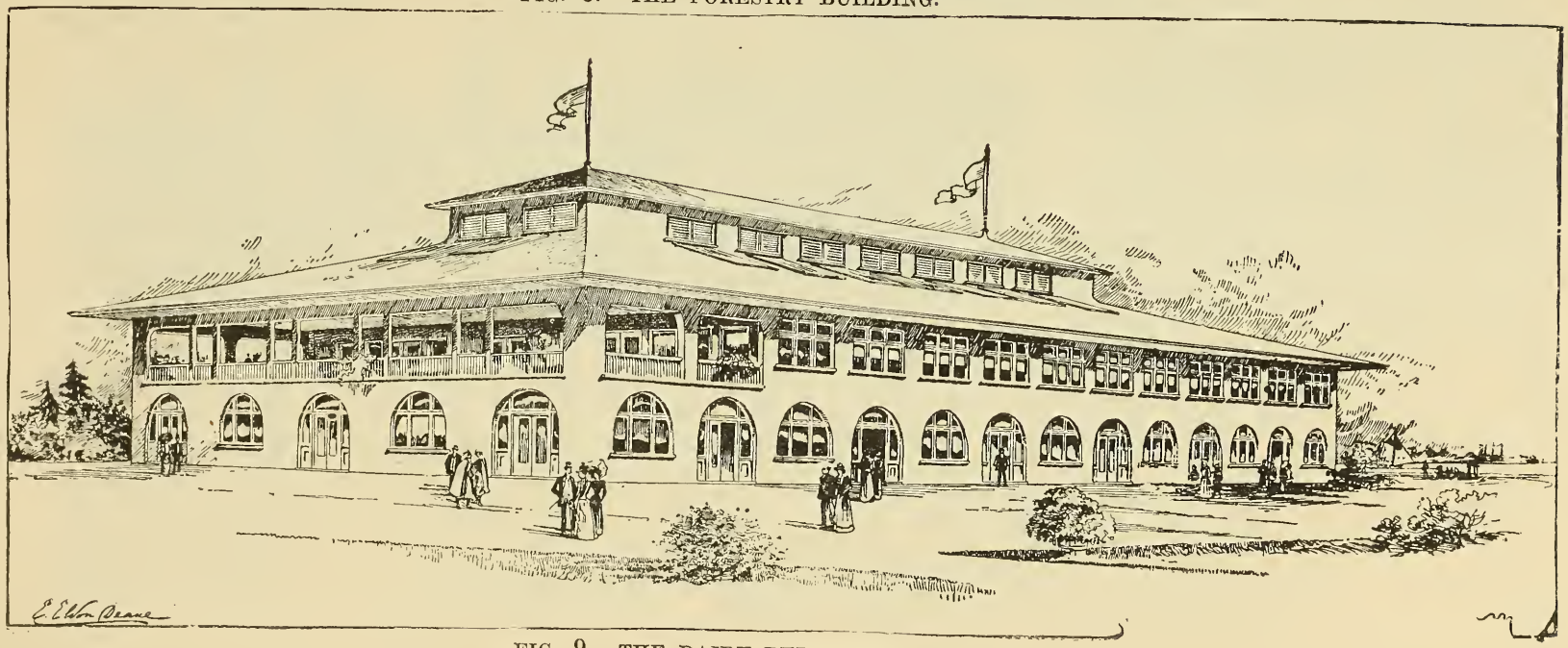


FIG. 9.—THE DAIRY BUILDING.

IV.—THE AGRICULTURAL BUILDING.

The Agricultural Section covers an area as large as that of the Green Park, and two-thirds of it will be covered with buildings, one-sixth of the whole being devoted to the Main Hall and the remainder to cattle sheds, stockyards, and a great assembly room, which will be used for musical performances and afterward as a cattle ring. The interior of the great building will present no striking features, but the outside, as you will see from fig. 6, is elaborate.

Its main cornice is 65 feet above the ground; it has a large corner pavilion with central entrances, and a lofty colonnade running round each side. In the center of the building will be a rotunda 100 feet in diameter, and 130 feet high, and the exterior will be enriched by statuary at all the salient points.

Adjoining the Agricultural Building are several others; an annex, 328 feet by 500 feet, to receive overflow exhibits; a sawmill, nearly an acre in extent, and a Forestry Building of 2¼ acres. A view of this latter building is given in fig 8.

The names of these buildings indicate their purpose, as also does that of a dairy (the design of which is shown in fig. 9), half an acre in extent, and in which it is intended that all the most advanced appliances and methods of American dairy farming shall be exhibited. South of the Agricultural Building are the yards and live stock sheds, these being no less than 40 acres in extent, and the open yards are 20 acres.

V.—MACHINERY HALL.

The Machinery Hall will cover an area of seventeen acres; that is to say it is more than twice as wide, and nearly four times as long as the Royal Agricultural Hall, at Islington.

Its elaborate facade is on the Grand Avenue (see fig. 10), with a great classic portico, flanked by two towers as high as the London Monument. Within, its main feature will be three broad arched

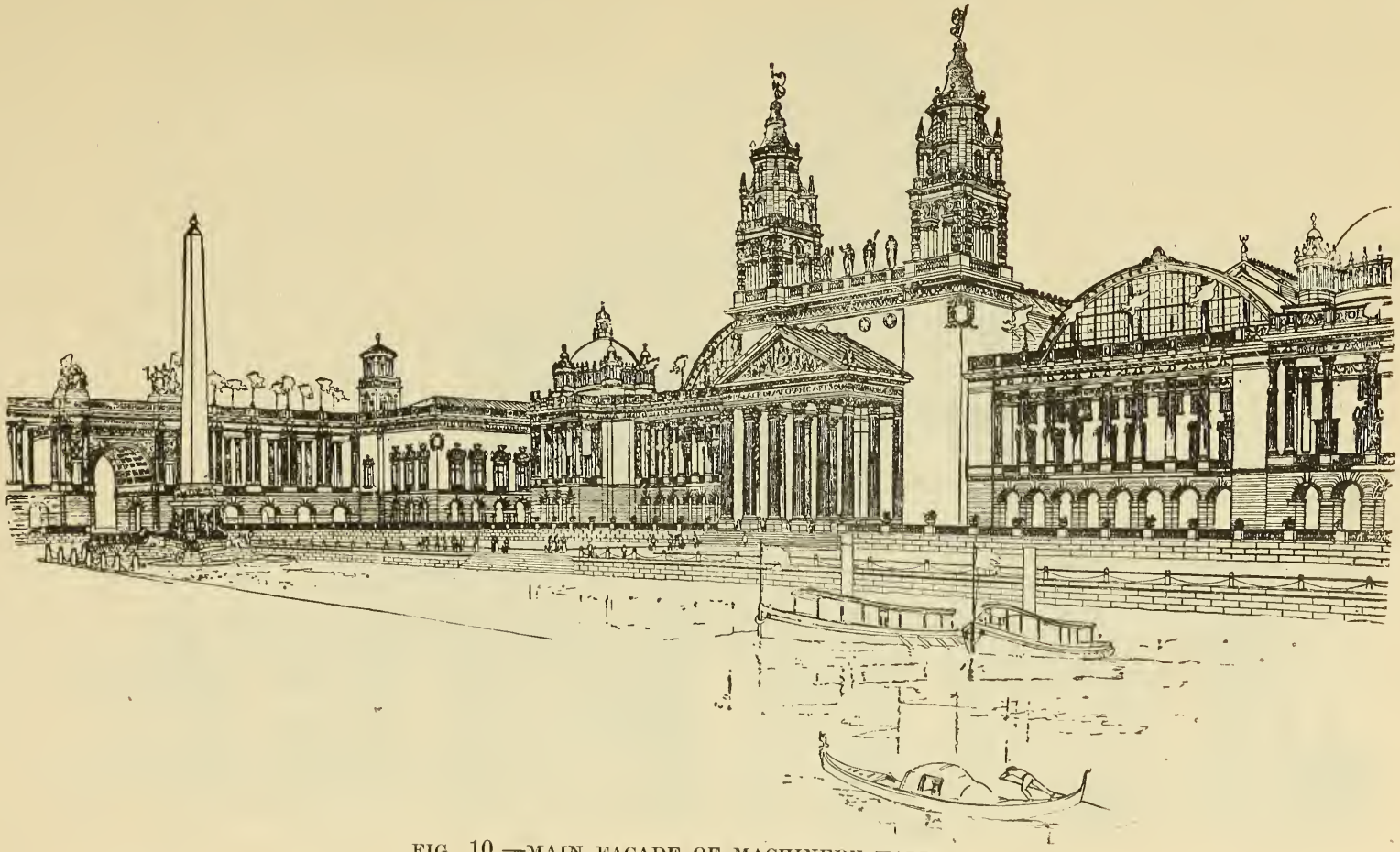


FIG. 10.—MAIN FACADE OF MACHINERY HALL.

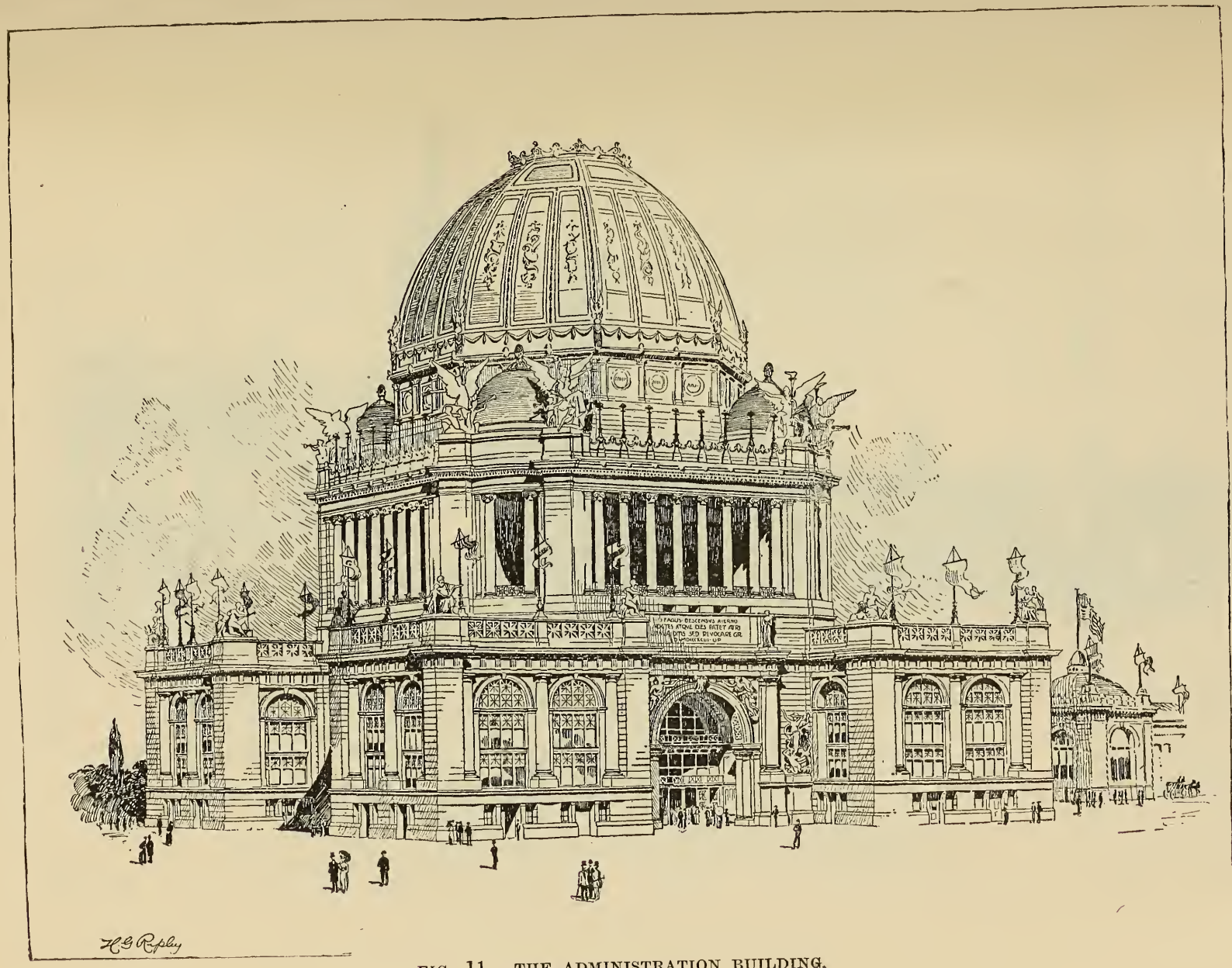


FIG. 11.—THE ADMINISTRATION BUILDING.

galleries running down its whole length, but broken in the center by a transept with three domes; galleries extend around all four sides of the building, and the other elevations, which are not so elaborate as that of the main facade, will nevertheless, be highly ornamented. The classification and contents of this building will, of course, resemble those of the Machinery Hall at any other International Exhibition. Time will not allow me to enlarge on this point, but I may mention one or two novel and interesting features which it is intended shall be carried out. Machinery in motion is to be largely driven by compressed air, or by electricity, not by steam, so that many of the disadvantages attending the use of this last-named agent will be avoided. Then one part of the Machinery Hall will be arranged as a vast power station for generating electricity; steam engines and dynamos—which will form exhibits--to the extent of 25,000 h.p. will constitute the station, and the current generated will be distributed over the grounds.

VI.—THE ADMINISTRATION BUILDING.

The Administration Building (fig. 11) is set at the western end of the Grand Avenue; it will consist of a great rotunda 120 feet in diameter, surrounded by a dome, the top of which is 270 feet from the ground; around the rotunda will be the spacious and numerous offices required for administrative purposes. As you will see from the view, the exterior is very elaborate, and is a very fine piece of architectural design; the public will be admitted to the various galleries as high as the springing of the dome, and the interior will be very richly decorated: the outside of the dome will be covered with burnished metal.

Comparing its size with that of St. Paul's Cathedral, it will be half the length but more than twice the width of that famous structure; the dome will be 38 feet larger in diameter. and its total height will only be 90 feet less.

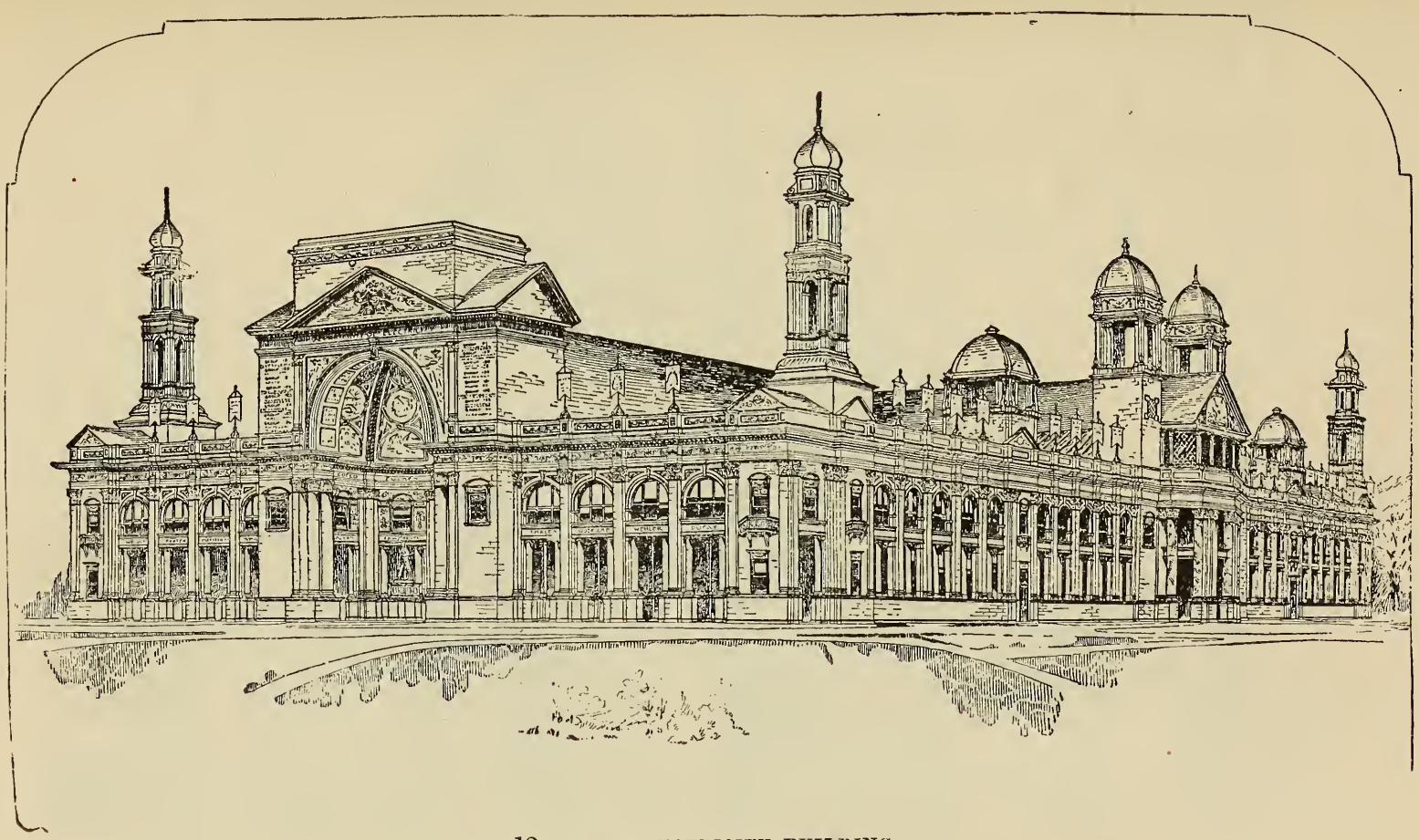


FIG. 12.—THE ELECTRICITY BUILDING.

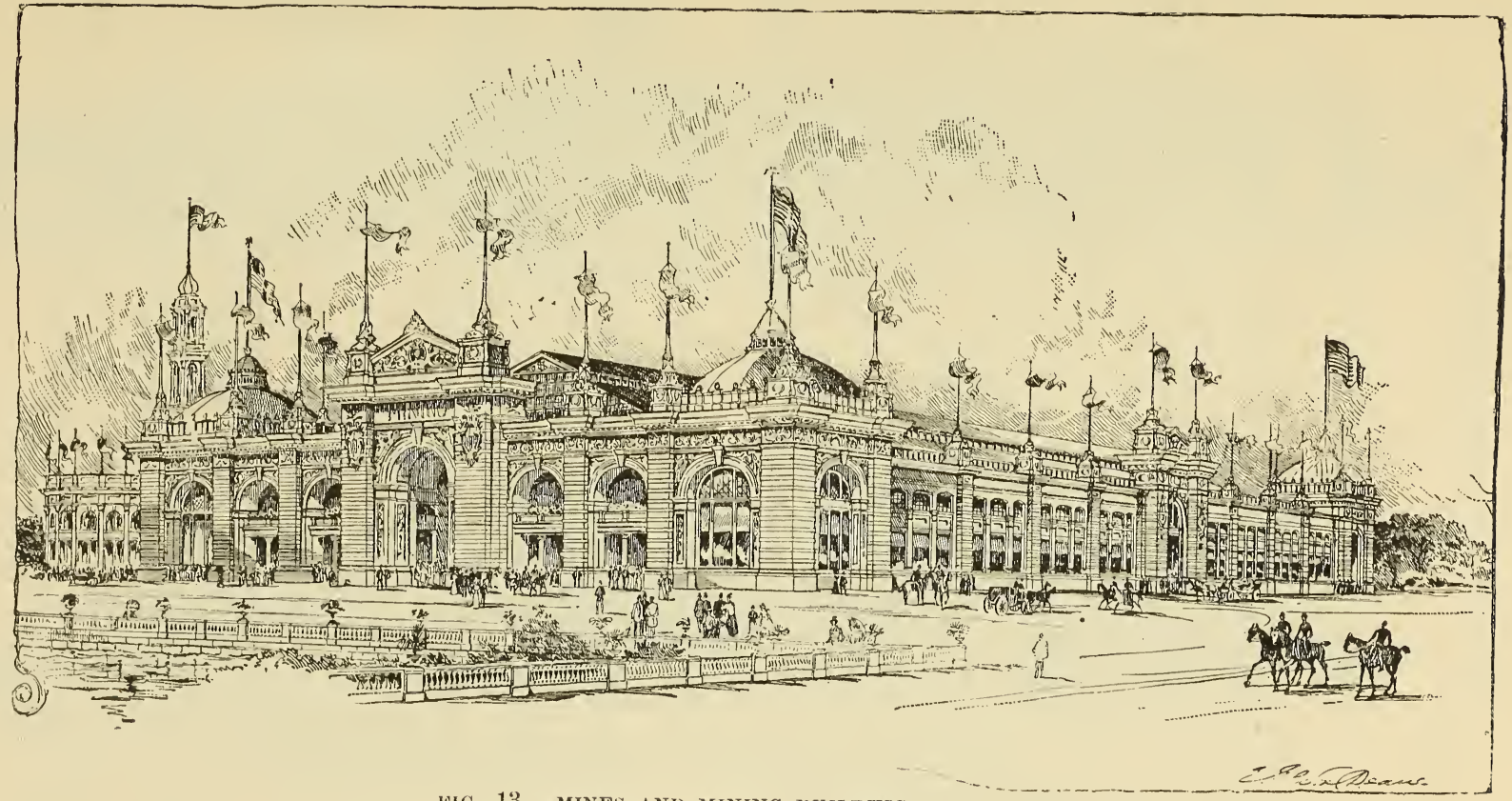


FIG. 13.—MINES AND MINING BUILDING.

VII.—THE LIBERAL ARTS BUILDING.

The great hall of Industries and Liberal Arts, of which a general view is given in fig. 7, will cover an area of 30½ acres, that is one-half the size of the Green Park; its main feature will be one large span, the same width as the Machinery Hall at the Paris Exhibition in 1889, but 61 feet higher in the center, so that there would be height for the London Monument to be placed in it and leave 6 feet to spare. This hall will be nearly 200 feet longer than the Crystal Palace, and the comparatively narrow aisles which are built around it are as high as the South Transept of the Crystal Palace, and half as wide again. It is in this building that the largest and most important space, amounting to 120,000 square feet, has been allotted to Great Britain and her colonies. A passing reference may be made here to the Ethnological exhibit, which promises to be of very large extent and interest, and will be placed within this building.

VIII.—THE ELECTRICITY BUILDING.

The Electricity Building, which covers nearly four times the floor space of the Royal Agricultural Hall at Islington, will, as you see from the engraving (fig. 12), be of very handsome architectural proportions. The towers, which are such conspicuous features, are 200 feet in height. A gigantic statue of Benjamin Franklin will be placed in the center of the great portico.

Internally the building, though so large, will have no great constructive features. Its contents, which will illustrate all branches of development in electrical science, cannot fail to be of interest. I may here pause to mention that it is intended that all the buildings and most of the grounds should be lighted at night, the necessary electric current being supplied from the great power station of the Machinery Hall. Up to the present time it is estimated that no less than 7,000 Arc lamps and 120,000 Incandescent lamps will be required for the buildings and grounds; but it is almost certain these numbers will be largely exceeded.

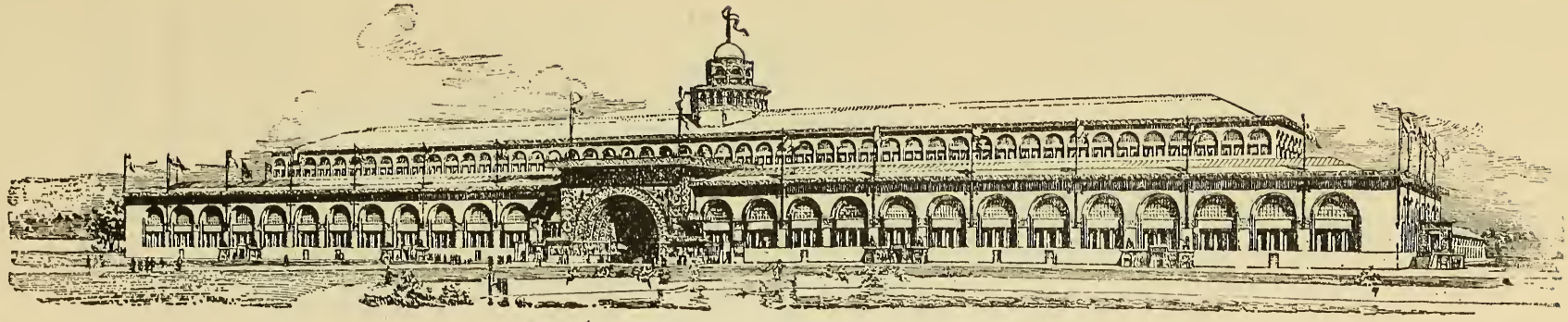


FIG. 14.—THE TRANSPORTATION BUILDING.

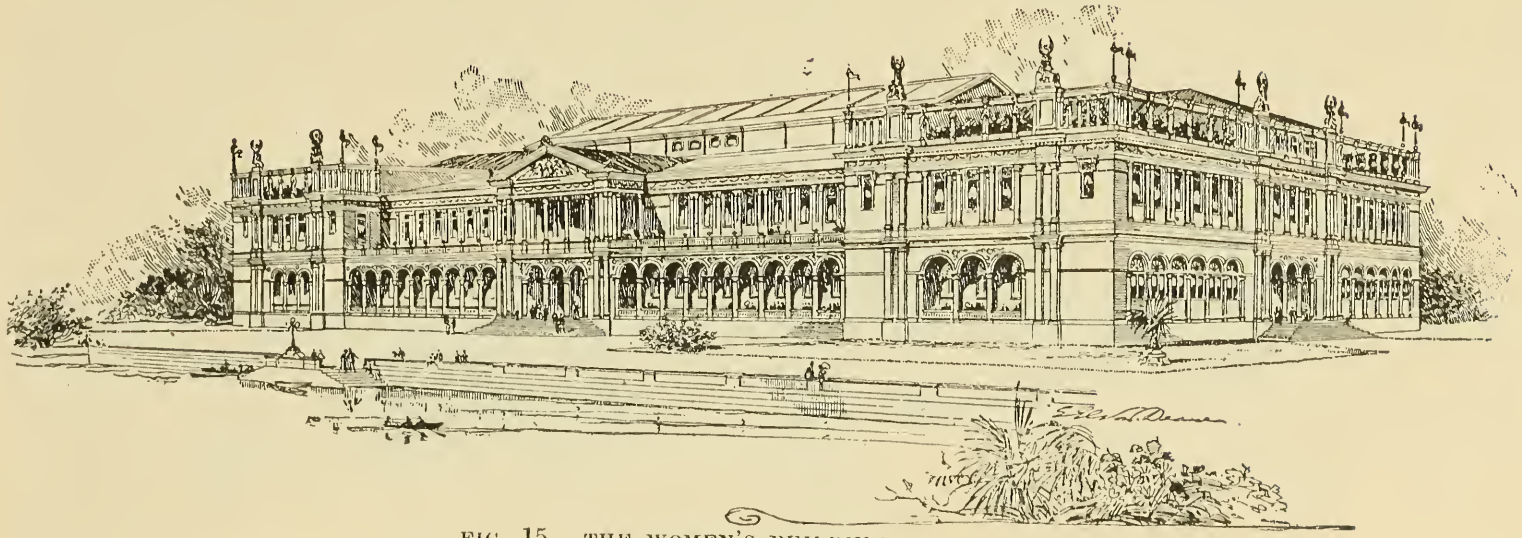


FIG. 15.—THE WOMEN'S BUILDING.

IX.—MINES AND MINING BUILDING.

This structure (fig. 13) is about the same size as the Electricity Building just referred to. You will see that it is also of very elaborate design, and though the main central entrances are 90 feet in height, the building compared with those for Electricity and the Liberal Arts is comparatively low. Within this building will be shown collections of ores, minerals and mineral products of every hind; machinery and processes for mining and metallurgical purposes, and many applications of minerals on metals in art and industry.

X.—THE TRANSPORTATION BUILDING.

The Transportation Building (fig. 14) which is much longer and narrower than either of the two structures we have just referred to, is of about the same area. As you will see, this building differs very widely in exterior appearance to any of the others; its two great features are a central cupola rising 165 feet above the ground, and the great doorway of very elaborate design, and which will be decorated almost entirely in gold.

The collection within this building will illustrate the history of transportation by land, on the water, and in the air, from the earliest times to the present day. Drawings and models will, of course, figure largely in this collection, but great numbers of actual objects will also be exhibited

XI.—THE WOMEN'S BUILDING.

The Women's Building is certainly a novelty in international exhibitions, for although on each of these occasions, exhibits of female art and industry become more extensive and higher in class, still hitherto no building has ever been set apart for the exclusive display of women's work. But this has been done in Chicago, and on so large a scale and in so energetic a manner, that the Women's

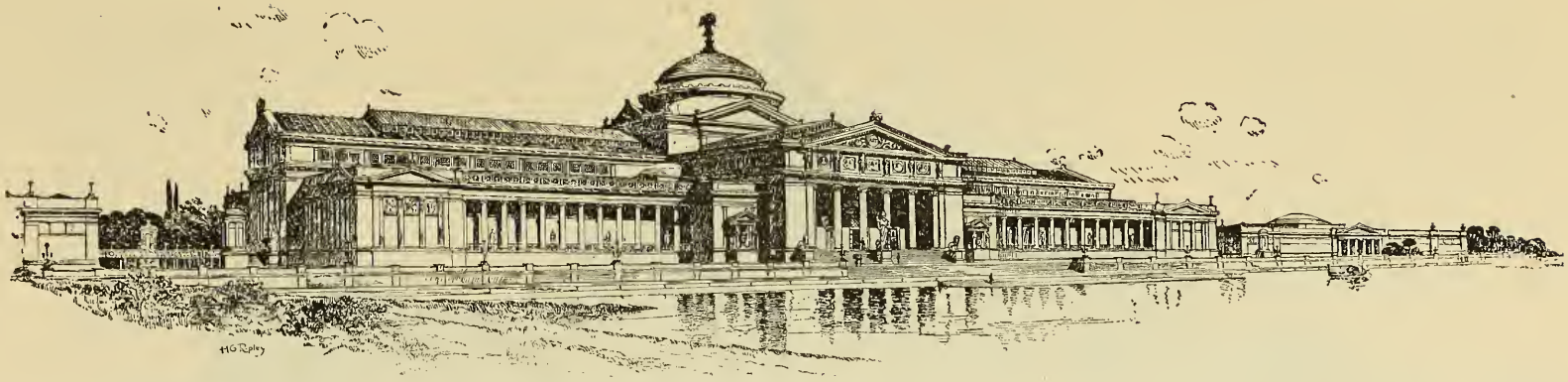


FIG. 16.—THE FINE ARTS BUILDING.

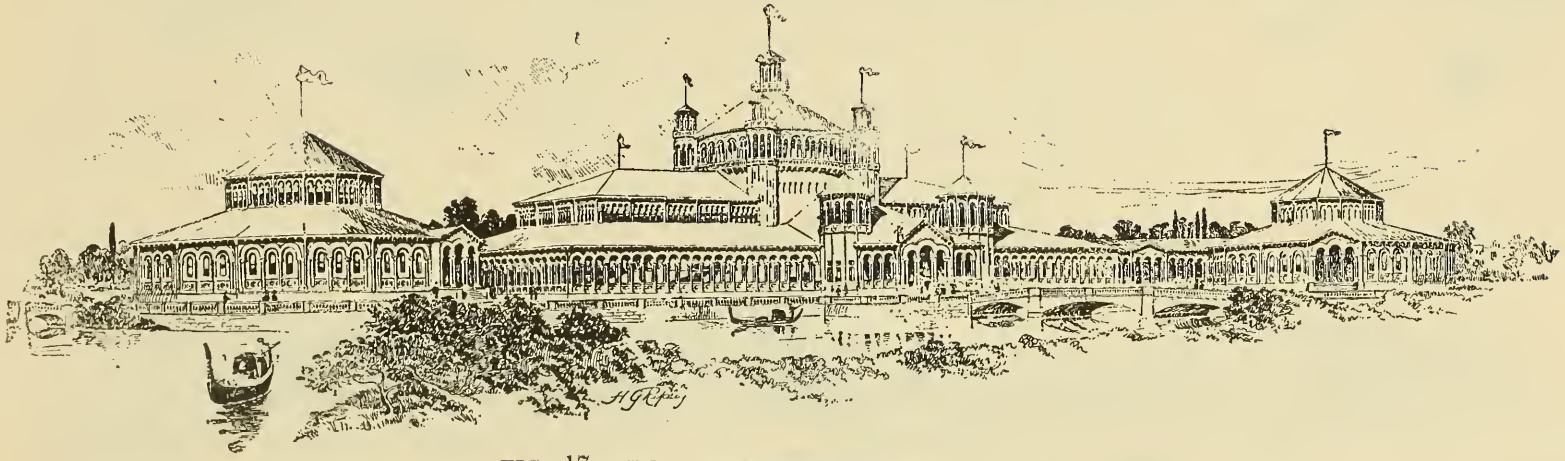


FIG. 17.—THE FISHERIES BUILDING.

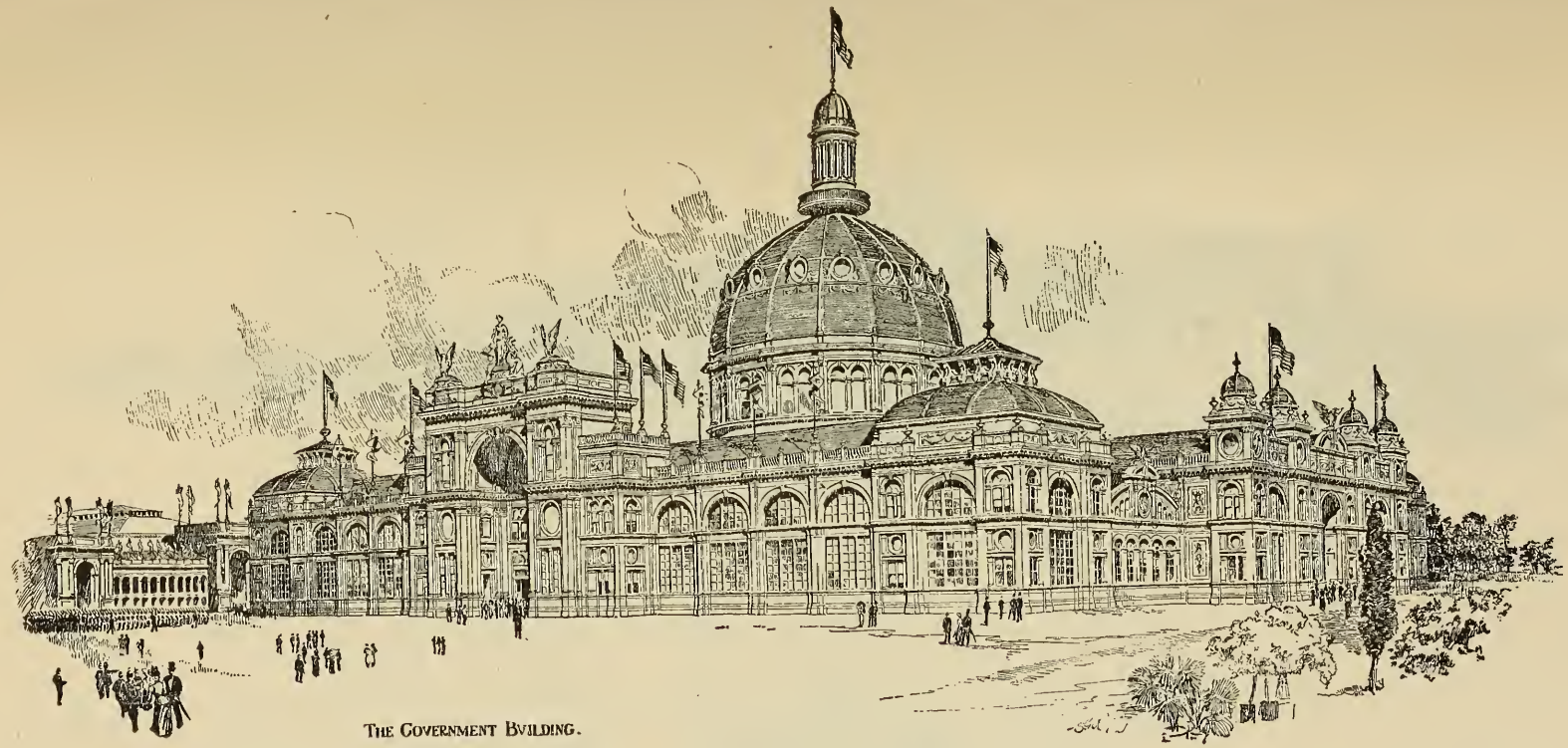


FIG. 18.—THE UNITED STATES GOVERNMENT PAVILION.

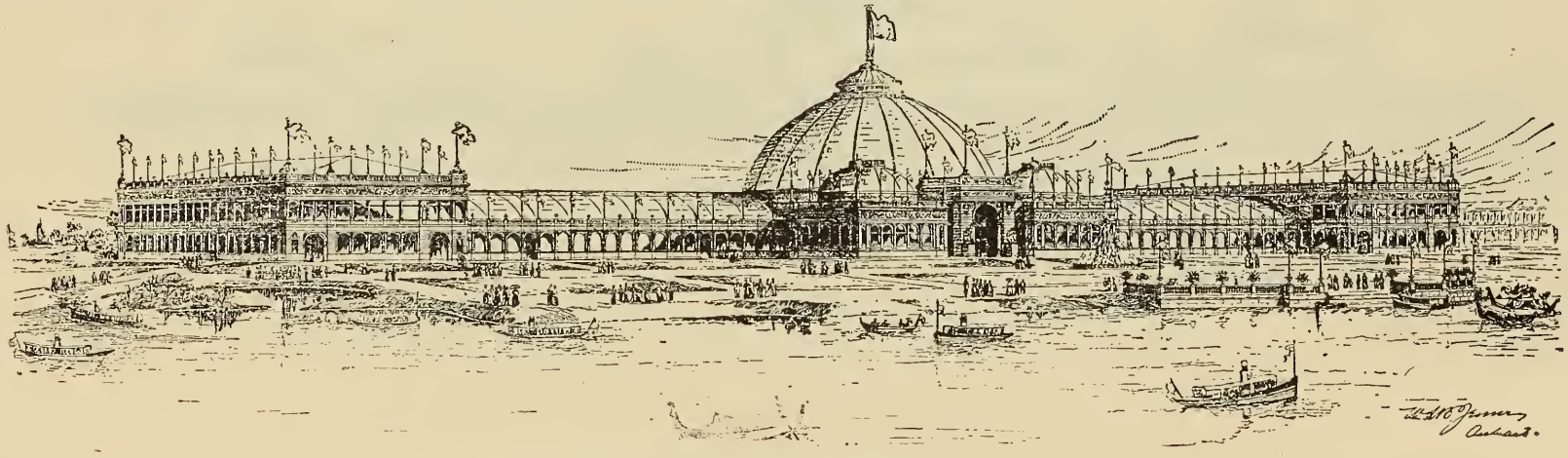


FIG. 19.—THE HORTICULTURAL BUILDING.

Building will form a very important factor in the Exhibition. As you will see from fig. 15, it is a very handsome building, comparatively small, however, since it does not cover quite two acres of ground. It is the design of a lady architect; its internal decorations will be produced wholly by female workers; and its organization is controlled by a committee of lady managers, presided over by Mrs. Potter Palmer, of Chicago.

XII.—THE FINE ARTS BUILDING.

The Fine Arts Building (fig. 16) which is situated near the north of Jackson Park, will be a very beautiful structure in a pure style of Grecian Ionic. It will cover about four acres of ground; is rectangular in plan; and is divided into four great courts (subdivided into a number of smaller ones) by a broad central nave and transept, which will be used chiefly for the display of statuary. In the center will be a rotunda, covered by a dome. The principal entrance to the building will be approached by a broad flight of steps, and statuary will be lavishly used around the exterior. The structure is essentially fire proof, being built of brick, terra cotta, and steel. There will be a mile of hanging space for pictures, and one of the four divisions, above mentioned, has been alotted to Great Britain; the others will be occupied by the United States, France, and Germany. On each side of the main building will be isolated annexes for further art exhibits.

XIII.—THE FISHERIES BUILDING.

The Fisheries Building (fig. 17) with its circular annexes at each end, will form a very picturesque addition to the group of Exhibition buildings.

As its name denotes, it will be devoted to the display of objects illustrating fish culture, appliances for fishing, the utilization of fish for food and for industrial purposes, and the exhibition of a very large number of fresh and salt water fish in aquaria.

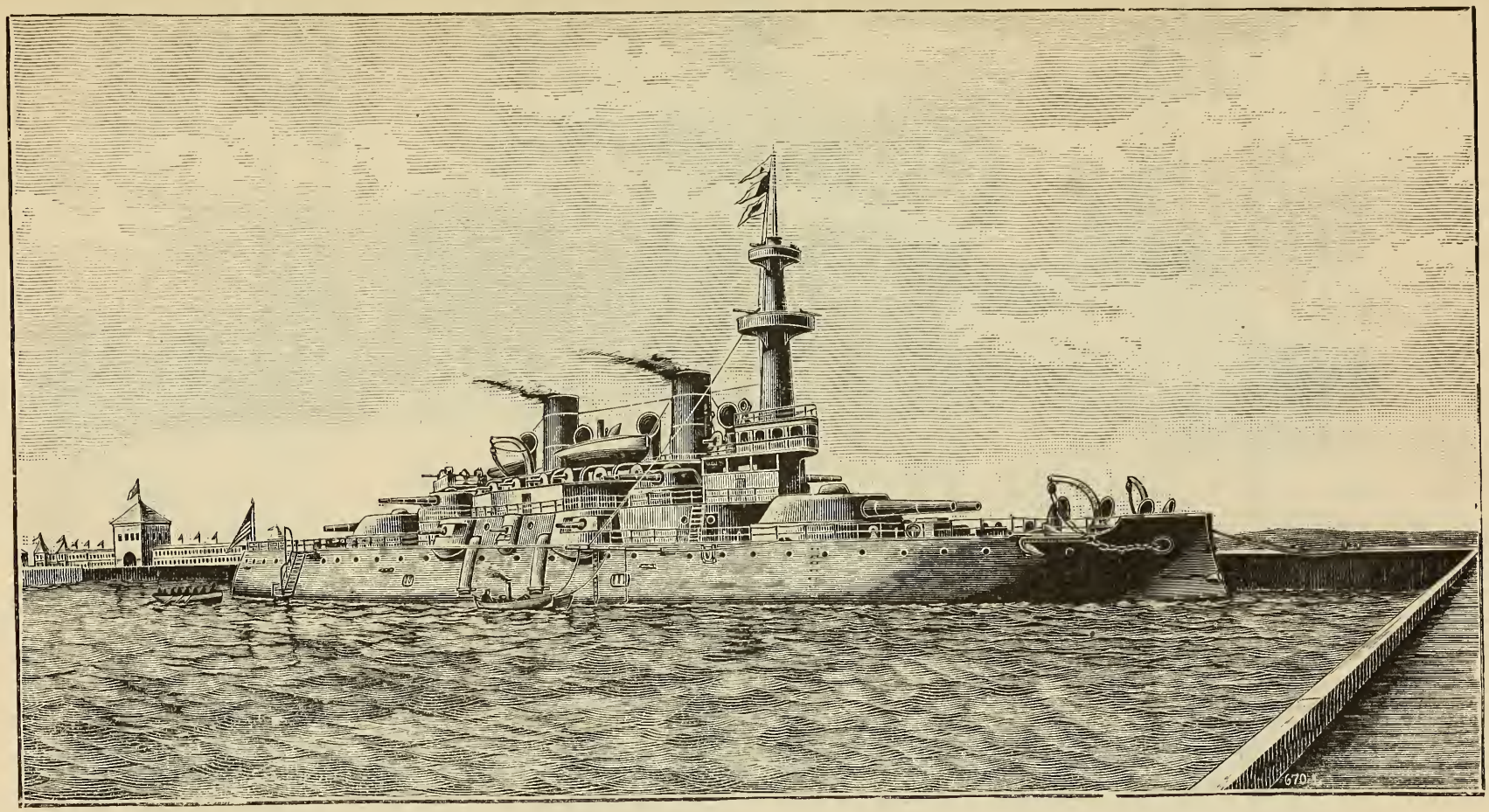


FIG. 20.—THE UNITED STATES NAVAL EXHIBIT.

XIV.—THE UNITED STATES GOVERNMENT EXHIBIT.

The United States Government has voted 1,500,000 dollars for their participation in the Exhibition. Of this amount $400,000 is to be spent on the pavilion, of which a view is given in fig. 18, and which will contain exhibits from each Department of State.

It is delightfully located near the lake shore, south of the main lagoon and of the area reserved for the foreign nations and the several States, and east of the Women's Building and of Midway-Plaisance. The buildings of England, Germany and Mexico are near by to the northward. It is classic in style, and bears a strong resemblance to the National Museum and other Government buildings at Washington. It covers an area of 350 by 420 feet, and is constructed of iron and glass. Its leading architectural feature is an imposing central dome 120 feet in diameter and 150 feet high, the floor of which will be kept free from exhibits. This building fronts to the west and connects on the north, by a bridge over the lagoon, with the building of the Fisheries exhibit.

The south half of the Government Building is devoted to the exhibit of the Postoffice Department, Treasury Department, War Department, and Department of Agriculture. The north half is devoted to the exhibits of the Fisheries Commission, Smithsonian Institution and Interior Department. The State Department exhibit extends from the rotunda to the east end, and that of the Department of Justice from the rotunda to the west end of the building. The allotment of space for the several department exhibits is: War Department, 23,000 square feet; Treasury, 10,500 square feet; Agriculture, 23,250 square feet; Interior, 24,000 square feet; Postoffice, 9,000 square feet; Fishery, 20,000 square feet, and Smithsonian Institution, remainder of space

In the lake, and in front of the ground on which the Government pavilion is erected, will be the United States' Navy exhibit, a full-sized model of one of the largest American ironclads, which is to be complete in every particular. The model will be 348 feet long upon the water line, 69 feet 3 inches wide amidships, and it will have 14

feet of freeboard. The hull of the vessel from the submerged platform to the main deck, will be built of brick and concrete, finished outside and inside with cement molded to the contour of the vessel. Beneath the water line an apron of molded iron plates will extend to shield the platform, so that under no circumstances will the semblance of reality be destroyed. Upon the main deck will be built two armor-plated redoubts, 34 feet 6 inches in diameter, and in each of these will be mounted two 13-inch breech-loading guns. These guns, as well as the redoubts, are built up of a wood framing, finished with cement; the guns, however, will be fitted with a steel rifled tube and breech mechanism, while the carriages on which they are mounted will be so real that all the evolutions of loading and training can be performed. In the same way the mechanism for revolving the turret, handling ammunition, etc., will be capable of being worked. On the upper deck there will be eight 8-inch guns, also mounted in turrets or redoubts, and a battery of Hotchkiss guns will be furnished. The armament will comprise in addition, four 6-inch rifled guns, which are mounted on sponsons built out from the side of the ship; twenty 6-pounder quick-firing guns; six 1-pounder quick-firing guns; two gatlings, and six torpedo tubes. The whole of this minor armament will be real, and the guns will be furnished by the Naval Gun Factory, with carriages, shields, and all equipments in complete working order. An iron military tower will be built at the forward part of the upper deck, and above will be the military tops in which some of the quick-firing guns will be mounted. The conning tower will also be shown completely fitted with all the electrical and other appliances required by the commander in time of action. The bridge, which extends along the whole length of the vessel, carries a number of Hotchkiss guns and the chart-house; on each side of this bridge the boats are hung, and these, together with the cranes, davits and appliances for working them, will all be actual, so as to form real and working exhibits. Torpedo spars will be fitted to the sides of the ship, so that the operations of manipulating the torpedo netting can be exhibited. A large electric-light plant will be fitted up on board to illustrate the various uses of electric light on board ship. The quarters for officers and men will be in all respects an exact reprodution of the actual

FIG. 21.—PAVILION OF THE STATE OF DELAWARE.

accommodation on these ships; and during the time of the Exhibition the vessel will be manned completely, and, so far as is possible, all the evolutions on board a man-of-war will be regularly carried out. The one war ship, the *Michigan*, which, by a treaty with this country, is allowed to cruise upon the lake waters, will have her station near the model ship during the Exhibition; and if the permission of the British Government can be obtained, a fleet of American-built torpedo boats will be also moored in the same locality. Fig. 20 shows exactly how this model ship—to be called the *Illinois*—will appear when completed.

The idea of having an exhibit of this kind was conceived by Capt. R. W. Meade, U. S. N., representative of the Navy Department, U. S. Government Board of Management; and was designed by Mr. F. W. Grogan, Architect Naval Exhibit.

XV.—THE HORTICULTURAL BUILDING.

The Horticultural Building (fig. 19) is a great conservatory nearly as large as the Crystal Palace; in the center there will be a dome 187 feet in diameter, and 113 feet high, that is to say, a few feet higher than the South Transept of the Crystal Palace; this will be used for the display of palms, tree-ferns, etc. The remainder of the building will be arranged for stove, hothouse, and cool greenhouse plants, fruit and vegetables, and horticultural implements. I may mention that the Horticultural Building will be surrounded with extensive grounds, laid out in the most elaborate manner and adapted for flower displays, which will also be exhibits.

XVI.—DECORATION OF THE BUILDINGS.

I have now referred separately to all the principal buildings of the Exhibition, but, before quitting this part of the subject, I would like to refer to a novel feature that has been introduced by the Exhibition Executive. This is the establishment of a department of color which controls the whole of the decoration external and internal of the buildings. The chief of this important department is a

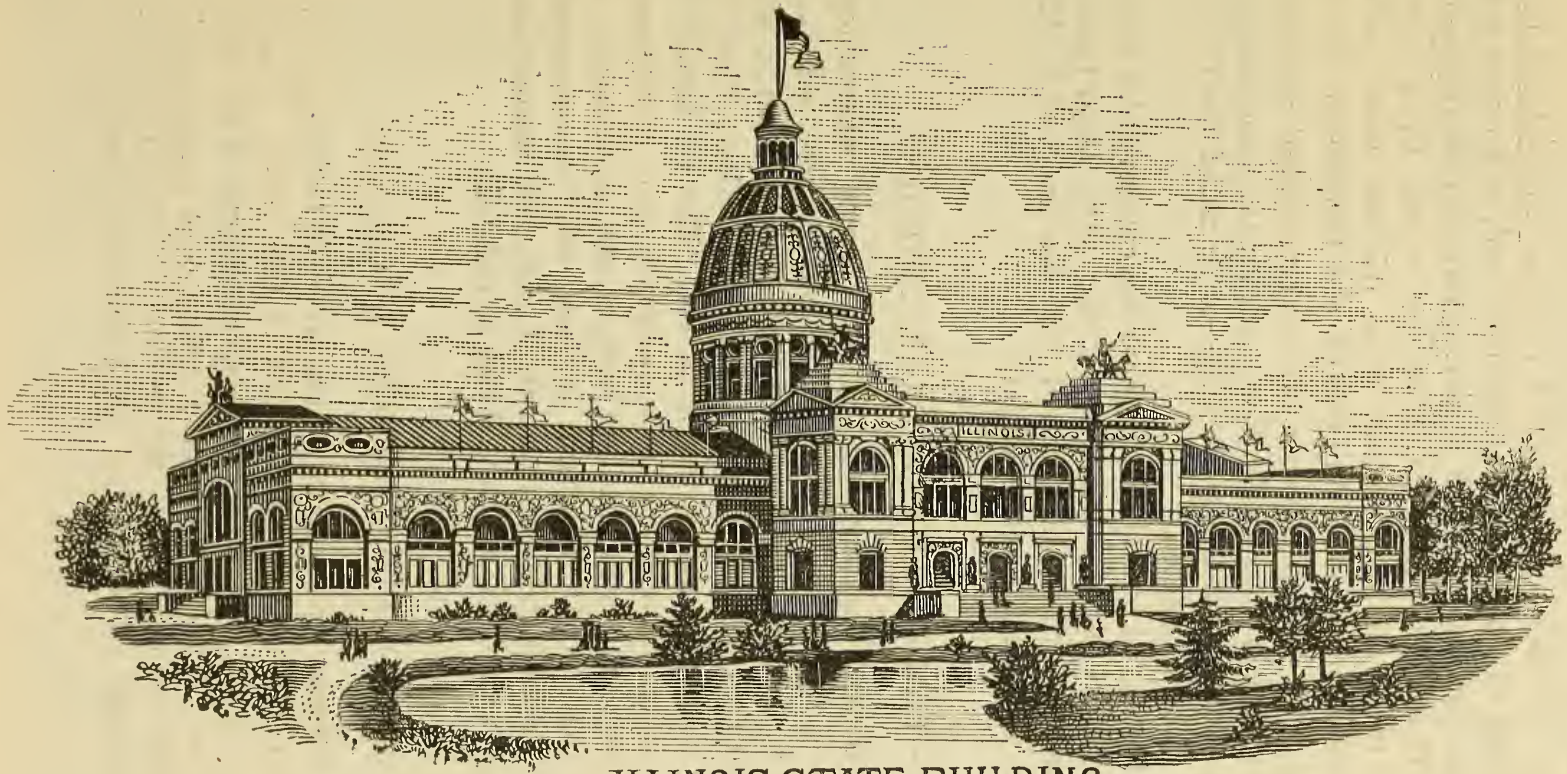


FIG. 22.—PAVILION OF THE STATE OF ILLINOIS.

very able artist, Mr. William Pretyman, who has prepared and is carrying out a general scheme of color for the whole of the buildings.

XVII.—THE MIDWAY-PLAISANCE.

The Midway-Plaisance is a strip of ground about 600 feet in width and a mile in length, that connects Jackson with Washington Park. The junction with the former is at the point shown on the plan, immediately opposite the Women's Building. This extensive piece of land, at present almost waste, is to be converted to various uses, that may perhaps be best described as a Street of Nations. Here will be collected all, or nearly all, of the Auxiliary Exhibitions, to which admittance will be gained by extra payment — theaters, panoramas, Oriental amusements, and the like. It is to be a Bazaar of all Nations, for it is only in this part of the Exposition that current sales will be allowed. Native villages from various civilized and uncivilized parts of the world will be organized, to gratify the curious, or instruct the student. Refreshment booths and beer gardens will not be wanting, and probably more than one of those ingenious reproductions, initiated some years ago by the inventor of Old London, and since so often and so successfully repeated, will find a profitable if short existence on the Midway-Plaisance. There is little doubt that this portion of the Exhibition will always be crowded, just as the famous Rue de Caire, at Paris, in 1889, was usually impassable. But this Bazaar of all Nations will be on a much larger scale than the Rue de Caire, and a railway running down the whole length will be a necessity. The concession for this railway has been granted to the proprietors of the sliding water railway that attracted so much attention in Paris, and no doubt a proportionate degree of success is awaiting it in Chicago.

XVIII.—THE EXHIBITION GROUNDS.

After the 200 acres of buildings are deducted, there will still remain in Jackson Park a space to be laid out as pleasure grounds for the public larger than Hyde Park. This extensive work is being carried out by a famous firm of American landscape gardeners.

Wide canals and lakes will enter largely into the scheme of decoration, and many thousands of trees will be transplanted during the next few months. Probably the greatest number will be concentrated on the wooded island, opposite the Horticultural Building, and which is to present a complete collection of the timber trees of the United States. In such experienced hands there is no fear that the Exhibition buildings will not receive a suitable setting of artistically arranged lawns, trees and flowers. I have made no mention of the various Pavilions which will be erected by the different States of the Union as offices, and to contain collective exhibits; these will vary very largely in design and in size; fig. 21 and fig. 22 represent probably the two extremes. The former is the Pavilion of the State of Illinois, and will be placed opposite the Fine Arts Building. It will be 160 feet wide, and 450 feet long. Excepting for a space at one end, 75 feet by 60 feet, which will be reserved for a model school house, the interior will present an unbroken rectangular hall, in which the State exhibit will be collected; a memorial hall on one side and a spacious vestibule on the other will form wings to the main structure. The architecture is Italian Renaissance, and the principal feature will be a central dome 72 feet in diameter, and about 200 feet high.

XIX.—THE COLUMBUS EXHIBIT.

On an elevated tongue or land projecting into the lake to the south of the pier will be erected a reproduction of the convent of La Rabida, in Palos, whence Columbus sailed on his first voyage to the New World. In and around this building will be arranged a surprising collection of the relics of Columbus which are being sought for and obtained freely in Europe, the West India Islands and in South America. There will be a reproduction of one vessel, at all events, as exact as it is possible to obtain, of the fleet in which Columbus sailed from Spain four hundred years before. This vessel, now being built in Spain, will be navigated across the Atlantic; will take part in the great naval review to be held in New York harbor in the spring of 1893; and will thence be taken to Lake Michigan and be moored under the walls of the convent. The Columbus

Exhibit will comprise everything that can be gathered to illustrate the life and work of the great discoverer, including models of his seven birthplaces, and of his numerous tombs.

Besides these mementoes of Columbus, there will be other collections of the great conquerors of Mexico and of Peru, and of colonial and independent South America.

CONCLUSION.

I fear that I have already exceeded the limits of your patience, as well as those of the conventional time assigned to such an address as the present. Otherwise I could have greatly enlarged upon a subject that can be approached from so many points of view. I trust, however, that I have said enough to arouse in you sufficient interest to follow closely the recorded progress of this great work, as you will find it reported in the journals of this country and of America. By so doing you will acquire an intelligent and detailed knowledge of the scheme and scope; the organization and arrangement of the great Exhibition that will mark the close of the century; and those of you who avail yourself of the privilege afforded you by this Institution, and visit Chicago in 1893, will go there well posted in advance, and will thus be enabled to employ your time to the best possible advantage.

I do not think that any of you can realize the permanent benefits that should result for each of you as the consequence of this journey. I say without hesitation—so far as my personal experience is concerned—that there is no place in the world where so much can be learned in a short time as in the United States; a few weeks passed there is a liberal education. Only you must go prepared to learn the lessons that await you on every side; you must remember that this will not be a pleasure trip in the sense that your excursions to Paris, to Scandinavia, to the Mediterranean, or to Switzerland were pleasure trips. If there is one deeply marked and widespread national characteristic in the great American nation, it is earnestness. It is that quality which has, in a century raised the United States to the rank of a leading nation; has made it today the wealthiest country in the world.

It is not necessary for us to speculate whether this great quality, which has its drawbacks as well as its incalculable advantages, is a legacy from the grand old British stock that carried its life in its hands from our shores and cemented with its blood the foundation stones of the great Empire of the West; or whether the keener and more stimulating climate is rapidly evolving a new race to which slowness of pace is impossible. It is sufficient to know that you will see the results of the earnestness of which I speak, on every hand; that you will find a higher average of intelligence—that is, of practical intelligence—than you have ever met before, and that for the time at least you will be infected by the same earnestness and the same energy. Only you must leave behind you those British prejudices which are so dear to most of us, and which prompt us to draw comparisons, always—and usually without justice—in favor of our own country.

You must endeavor, as far as possible, to view America and American institutions from an American point of sight, and if you succeed in doing this, you will appreciate how great a country it is, and you will be lost in wonder at the nation that has done so much in so short a time. Leave prejudice behind you; take with you all the power of just appreciation that you can muster, and then great will be your reward; for not only will you return with broadened minds, and many new experiences, but you will visit no foreign country, but one where friendly hands will be stretched out to greet you warmly; where your arrival will be hailed with delight and your departure marked with regret. But unless you can go in the spirit I have hinted at; and more, unless you go determined to make your holiday a time of pleasant though continuous labor, it would be better for you, I think, not to go at all, because disappointment would inevitably await you. Perhaps some of you may think that I am making these suggestions rather prematurely, but time passes quickly, and good counsel is seldom out of season; moreover it is not likely that another opportunity will be afforded me of addressing you.

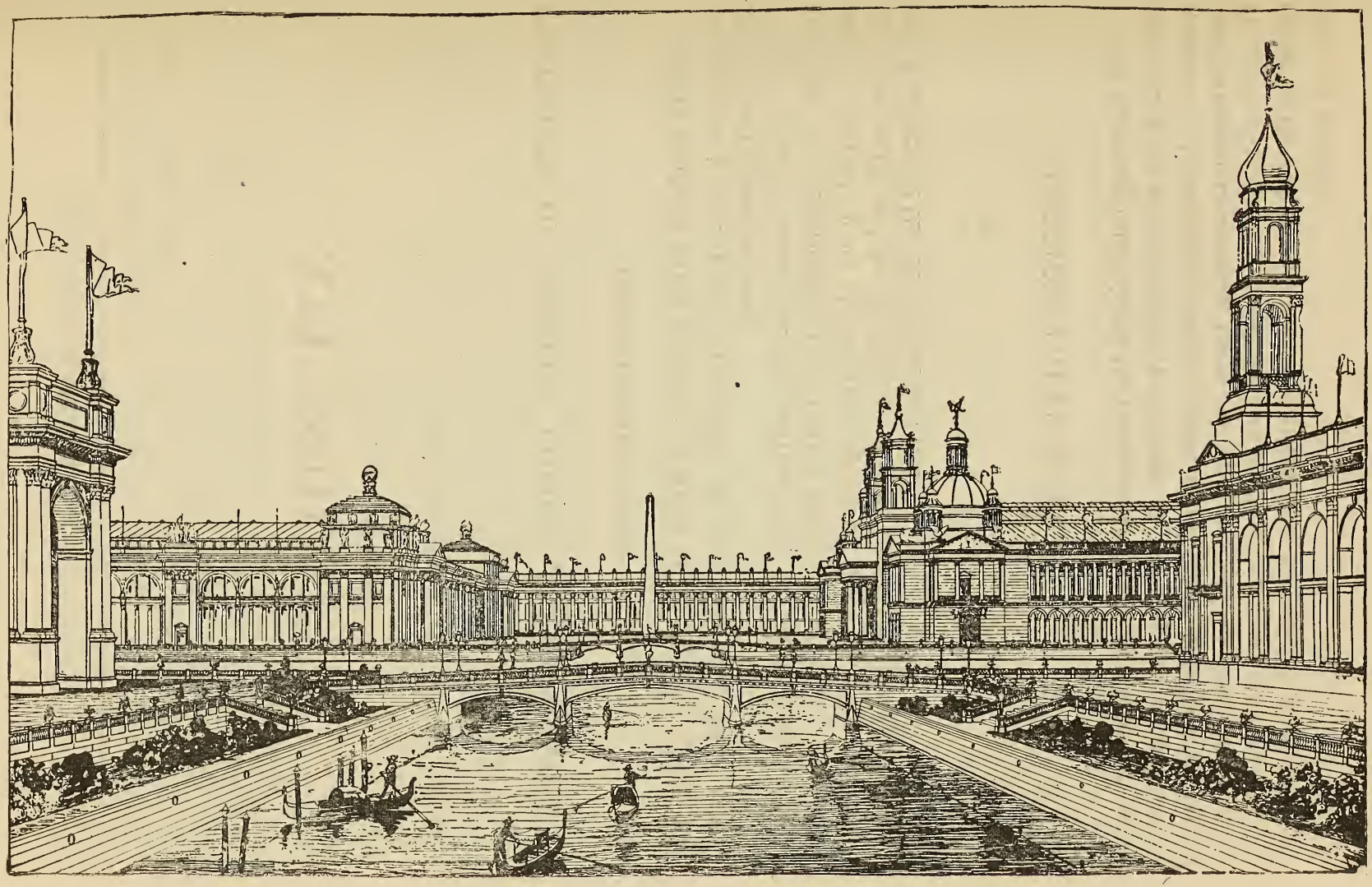


FIG. 10 AS DESCRIBED ON PAGE 26.

APPENDIX.

STATISTICS OF WORLD'S COLUMBIAN EXPOSITION.

Revised to March 5, 1892.

We are indebted to the kindness of Major M. P. Handy, Chief of Department Publicity and Promotion, for the following facts and figures on Exposition work.

The World's Columbian Exposition will be held under the auspices and supervision of the United States Government, having been authorized by act of Congress, approved April 25, 1890, which characterized it as "An Exhibition of Arts, Industries, Manufactures and Products of the Soil, Mine and Sea."

FOREIGN PARTICIPATION.

The following table shows the foreign nations and provinces which thus far have determined to participate in the Exposition, and the amounts of their appropriations, made or officially proposed, as far as information concerning them has been received at headquarters. In case of the nations and colonies marked with a star, the notification of their determination to participate is not official, but yet is believed reliable.

Argentine Republic	$100,000	Hawaii	
Austria	149,100	Hayti	$25,000
Belgium		Honduras	20,000
Bolivia	30,700	*Italy (informal)	
Brazil	600,000	Erythria	
Bulgaria		Japan	630,765
China		Korea	
Columbia	100,000	Madagascar	
Costa Rica	150,000	Mexico	50,000
Denmark		Netherlands	
Danish West Indies		Dutch Guiana	10,000
Ecuador	125,000	Dutch West Indies	5,000
*Egypt (informal)		Nicaragua	30,000
France	650,000	Norway	56,280
Algeria		Orange Free State	7,500
French Guiana		Paraguay	100,000
Germany	214,200	Persia	
Great Britain	125,000	Peru	125,000
*Barbadoes	6,000	Portugal (declined)	
*British Columbia		Madeira	
British Guiana	25,000	*Roumania	
British Honduras	7,500	Russia	
Canada	100,000	Salvador	12,000
Cape Colony	25,000	San Domingo	
Ceylon	40,000	*Servia (informal)	
*India		Siam	
Jamaica	20,000	Spain	
*Malta		Cuba	25,000
*Mashonaland		Porto Rico	
New South Wales	150,000	*Sweden	53,600
New Zealand	27,500	Transvaal	
Queensland		Turkey	
*South Australia		Uruguay	
Tasmania	10,000	Venezuela	
Trinidad	15,000		
*Victoria		Total	$3,940,145
*West Australia			
*Greece (informal)		Forty-four nations.	
Guatemalia	120,000	Twenty-eight provinces.	

At a low estimate the total of the appropriations of foreign nations, will reach $5,000,000. Nearly all the participating nations will erect buildings in the Exposition grounds. Building sites have al-

ready been selected for Great Britain, Germany, Japan, Turkey, Mexico, Peru, Brazil, Venezuela, Argentine Republic, Ecuador, Colombia, Costa Rica, and Guatemala. The United States Government, thus far, has authorized the expenditure of $1,500,000 for its participation and for the expenses of the National Commissioners and Lady Managers. This amount is certain to be largely increased.

THE STATES AND TERRITORIES.

Twenty-six States and two Territories, thus far, have made appropriations for their representation at the Exposition, as follows:

Arizona	$ 30,000	New Hampshire	$ 25,000
California	300,000	New Jersey	70,000
Colorado	100,000	New Mexico	25,000
Delaware	10,000	North Carolina	25,000
Idaho	20,000	North Dakota	25,000
Illinois	800,000	Ohio	100,000
Indiana	75,000	Pennsylvania	300,000
Iowa	50,000	Rhode Island	25,000
Maine	40,000	Vermont	15,000
Massachusetts	75,000	Washington	100,000
Michigan	100,000	West Virginia	40,000
Minnesota	50,000	Wisconsin	65,000
Missouri	150,000	Wyoming	30,000
Montana	50,000		
Nebraska	50,000	Total	$2,745,000

In several of the States named above, bills are pending in the Legislature to increase the appropriation already made. All of the other States are preparing for participation and will provide the necessary funds either by appropriation or private subscription. The aggregate expenditure by the States and Territories is expected to exceed $5,000,000. Nearly all of the States will erect buildings as State headquarters and receptacles for collective exhibits illustrating their resources. These structures, for the most part, will be two stories in height; will average about 50x75 or 100 feet in dimensions, and will cost all the way from $10,000 to $100,000 each.

THE EXPOSITION BUILDINGS.

The size and cost of the great Exposition buildings are indicated in the following table:

Buildings.	Dimensions in feet.	Acreage of floor space, including galleries.	Cost.
Manufactures and Liberal Arts	787x1687	44.	$1,500,000
Administration	262x 262	4.2	435,000
Mines	350x 700	8.7	265,000
Electricity	345x 690	9.7	401,000
Transportation	256x 960	9.4	370,000
" Annex	425x 900	9.2	
Women's	199x 388	3.3	138,000
Art Galleries	320x 500	4.	670,000
" Annexes (2)	120x 200	1.1	
Fisheries	165x 365	2.4	224,000
" Annexes (2)	135 diam'r	.7	
Horticulture	250x 998	6.6	300,000
" Greenhouses (8)	24x 100	.5	25,000
Machinery	492x 846	17.5	1,200,000
" Annex	490x 550	6.2	
" Power House	100x 461		
" Pumping Works	77x 84	1.9	85,000
" Machine Shop	146x 250		
Agriculture	500x 800	15.	618,000
" Annex	300x 550	3.9	
" Assembly Hall, etc	125x 450	1.9	100,000
Forestry	208x 528	2.6	100,000
Saw Mill	125x 300	.9	35,000
Dairy	100x 200	.8	30,000
Live Stock (3)	65x 200	1.2	335,000
" Pavilion	280x 440	2.8	
" Sheds	.....	40.	
Casino	120x 250	.7	*210,000
Music Hall	120x 250	.7	
		199.9	$7,041,000
U. S. Government	345x 415	6.1	400,000
" Imitation Battleship	69 25x 348	.6	100,000
Illinois State	160x 450	3.2	250,000
" Wings (2)	.....		
		209.8	$7,791,000

* Including connecting peristyle.

The last three are being erected, the first two by the United States Government, and the third by the State of Illinois. The visitor, however, will naturally class them among the great Exposition structures.

Of the total floor space (210 acres), about 50 acres, approximately, represent the galleries in the various buildings, and the upper floors in the Administration, Women's, Assembly Hall, and Government and Illinois buildings. It follows that the ground space covered is approximately 160 acres. At a rough estimate, the buildings of the States and of foreign nations will cover an additional five acres.

The Fine Arts Building with its annexes has 7,885 lineal feet, or 145,852 square feet of wall space for pictures. All of the annexes will be scarcely less imposing and architecturally beautiful than the main buildings themselves. The live-stock sheds, which will cover an immense area as indicated, are to be constructed as inexpensively as possible, without marring the general architectural effect. The power houses, pumping works, etc., are to be exhibits in themselves, and so constructed as to be readily inspected by visitors.

The total cost of the Exposition structures alone, not including those of the Government and of Illinois, is estimated at $8,000,000. Other expenses, including organization, administration, decoration, landscape gardening, water supply, lighting, etc., etc., bring the total amount to be expended by the Exposition Company above $20,000,000.

The Exposition buildings will be dedicated October 12, 1892. The Exposition will be open to the public from May 1 to October 30, 1893. The final allotment of space will be made about July 1, 1892. The reception of Exhibits will begin November 1 and continue until April 10, 1893. A single entrance fee, probably 50 cents, though not yet determined, will entitle visitors to see the entire Exposition proper. The special attractions on Midway-Plaisance will make a moderate additional charge. In April, 1893, an international naval review, preliminary to the opening of the Exposition, will be held in New York harbor, as provided by Act of Congress.

ENGINEERING:

AN ILLUSTRATED WEEKLY JOURNAL

Edited by WILLIAM H. MAW and JAMES DREDGE.

PRICE TWENTY-FIVE CENTS.

YEARLY SUBSCRIPTION:

Thick Paper, $10.00. Thin Paper, $9.00.

"ENGINEERING," besides a great variety of Illustrated Articles relating to Civil, Mechanical and Military Engineering and Notes of General Professional Interest, devotes a considerable space in each issue to the illustration and description of all matters connected with the

Practical Applications of Physical Science.

And is the only Journal that publishes the Construction Drawings of the **World's Columbian Exposition,** and purposes having Descriptive and Illustrated Articles on any Exhibits of special interest to the Scientific World.

EACH NUMBER ALSO CONTAINS AN

ILLUSTRATED PATENT RECORD

AGENTS FOR UNITED STATES:

NEW YORK:—W. H. WILEY, 53 East 10th Street.

CHICAGO:—H. V. HOLMES, Lakeside Building.

THE FOLLOWING WORKS ARE

PUBLISHED AT THE OFFICES OF ENGINEERING,

35 and 36 Bedford St., Strand, London, W. C.,

And can be obtained through our U. S. agents.

Demy 4to, cloth, price 30s., with 900 pp. and about 1,500 figures.

Electric Illumination: Vol. II.

By JAMES DREDGE, Dr. M. F. O'REILLY and H. VIVAREZ.

Edited by JAMES DREDGE.

This Volume contains: I. Electrical Measurement. II. Photometry. III. Dynamometers. IV. Recent Dynamos and Lamps. (Partly compiled from ENGINEERING). With an APPENDIX compiled by W. LLOYD WISE, Member of Council of the Institute of Patent Agents, containing Profusely Illustrated Abstracts of Specifications of all Patents granted in this country from January, 1873, to June, 1882, and having reference to Electrical matters.

VOL. I IS OUT OF PRINT.

Imp. 4to, Two Volumes. Half Morroco, price, £3, Illustrated by 176 plates and 295 Engravings in the Text.

Recent Practice in Marine Engineering.

By WILLIAM H. MAW.

Comprises descriptions of all the leading types of Marine Engines, together with Illustrated accounts of other Machinery, such as Dredging Plant, Engines for Rope and Chain Haulage, etc.

Partially reprinted from "ENGINEERING."

Large Imp. 4to, price, £2, 12s 6d.

The Pennsylvania Railroad:

By JAMES DREDGE.

Its Organization, Construction and Management; with Folding Map, 82 Plates, 100 Engravings in Text and 125 Tables.

Imp. 4to.

Modern French Artillery.

By JAMES DREDGE.

This Work comprises about 500 pages of Text, Tables and Plates, and over 700 Illustrations.

Chiefly reprinted from "ENGINEERING."

LIBRARY OF CONGRESS
0 019 713 567 0